DOCUMENT RESUME

ED 251 685 CE 040 316

AUTHOR Rozman, Frank E.; Kahl, Michael D.
TITLE Improving Counselors' Delivery of Career Guidance/Instructional Services through Computer Technology: A. High School Study. B. University Study. Final Report.
INSTITUTION Millersville Univ., PA. Career Planning and Placement Center.
SPONS AGENCY Pennsylvania State Dept. of Education, Harrisburg.
PUB DATE 84
NOTE 117p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Career Development; Career Education; *Career Guidance; College Freshmen; *Computer Oriented Programs; *Counseling Effectiveness; Counseling Techniques; *Counselor Attitudes; Educational Research; Grade 11; Higher Education; High Schools; Microcomputers; Pretests Posttests; *Vocational Maturity
IDENTIFIERS *Computer Assisted Guidance

ABSTRACT

Six high schools and Millersville University implemented the microcomputerized Discover II Career Guidance system. Subjects for the high school study were 386 juniors in six high schools within a 25-mile radius of Millersville University. Subjects were divided into control, Discover/directive counseling, and Discover-only groups. Pre- and post-tests measured career maturity. Post-tests surveyed career development activities. Pre- and post-tests surveyed counselor attitudes toward delivery of career guidance using microcomputer technology. Structured observations were conducted to assess counselors' incorporation of computer technology into career guidance. Discover II had a positive effect on career maturity, especially when combined with directive counseling. Counselors who used Discover II exhibited a more positive attitude toward computer technology. In the university study, use of Discover II was initiated at the Career Planning and Placement Center. Subjects were 87 freshmen enrolled in a course offering career assistance. The 10 sections were divided into control, Discover/directive counseling, and Discover-only groups. Pre- and post-tests measured subjects' career development and maturity. Discover II had a positive effect on career maturity and development, especially when combined with directive counseling. (Appendixes for both reports include forms, instruments, and survey results.) (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED251685

A

FINAL REPORT

FOR

IMPROVING COUNSELORS' DELIVERY OF CAREER GUIDANCE/INSTRUCTIONAL SERVICES THROUGH COMPUTER TECHNOLOGY

A. HIGH SCHOOL STUDY

B. UNIVERSITY STUDY

A RESEARCH STUDY

CONDUCTED BY

THE CAREER PLANNING & PLACEMENT CENTER
MILLERSVILLE UNIVERSITY
MILLERSVILLE, PENNSYLVANIA

AUGUST 1984

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

F Rozman

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

FUNDED BY

THE PENNSYLVANIA DEPARTMENT OF EDUCATION
UNDER CHAPTER 2 OF
THE EDUCATION CONSOLIDATION AND IMPROVEMENT ACT

CE 040 316

Copyright ©, 1984, Career Planning & Placement
Millersville University

All rights reserved. No part of the material protected by this copyright, including research forms/documents, or research outcomes, may be reproduced or utilized in any form or by any means (including electronic or mechanical: photocopying, recording, or by any informative storage and retrieval system) without the express written permission of the copyright owner.

BEST COPY AVAILABLE

TABLE OF CONTENTS

Page

FORWARD i

ACKNOWLEDGEMENTS ii

A. HIGH SCHOOL STUDY

HYPOTHESES iv

INTRODUCTION A-1
  Population A-1
  Study Design A-2
  Study Group Activities A-2

ANALYSIS A-3
  Methods of Data Collection A-3
  Technology Grant Questionnaire A-4
  Counselor Attitude Survey A-4
  Guidance Delivery Model A-4
  On-Site Observations A-4
  Career Development Inventory A-5
  DISCOVER II User On-Line Evaluation Data A-5
  Career Development Survey of Activities A-6

RESULTS A-6
  Technology Grant Questionnaire A-6
  Counselor Attitude Survey A-7
  Guidance Delivery Model A-7
  On-Site Observations A-8
  Career Development Inventory A-9
  DISCOVER II User On-Line Evaluation Data A-10
  Career Development Survey of Activities

CONCLUSIONS A-12

RECOMMENDATIONS A-15

Appendix A - Cooperative Agreement Form A-19
Appendix B - Project Orientation Meeting A-21
Appendix C - Project Timeline A-22
Appendix D - Technology Grant Questionnaire A-23
Appendix E - Career Guidance Counselor Attitude Survey A-25
Appendix F - Career Guidance Delivery Model A-32
Appendix G - Career Guidance Program Observation Form A-33
Appendix H - Career Development Inventory Subscales and their Meaning A-44
Appendix I - Career Development Inventory (High School Form) A-45

TABLE OF CONTENTS (cont.)

Page

Appendix J - DISCOVER II User On-Line Evaluation Form and Data A-64
Appendix K - Career Development Survey of Activities A-66

LIST OF TABLES

Table E-1 - Career Guidance Counselor Attitude Survey A-29

Table G-1 - On-Site Observations of Career Guidance Programs A-41

Table I-1 - Comparison of High School Treatment Groups to Posttest Score (Career Development Inventory) A-60

Table I-2 - Comparison of High School Treatment Groups by Sex Difference (Career Development Inventory) A-61

Table I-3 - Comparison of High School Treatment Groups by Program of Study to Posttest Scores (Career Development Inventory) A-62

Table I-4 - Comparison of Total High School Study Groups t Values to Posttest Scores (Career Development Inventory) A-63

Table K-1 - Career Development Survey of Activities A-69

B. UNIVERSITY STUDY

HYPOTHESES i

INTRODUCTION B-1
   Population B-2
   Study Design B-2
   Study Group Activities B-3

ANAYLSIS B-3
   Methods of Data Collection B-4
   Career Course Outline B-4
   Survey of Career Development B-4

TABLE OF CONTENTS (cont.)

Page

Career Development Inventory B-5
DISCOVER II User On-Line Evaluative Data B-5
Survey of Career Development Activity B-5

RESULTS B-6
Survey of Career Development B-6
Career Development Inventory B-6
DISCOVER II User On-Line Evaluative Data B-7
Survey of Career Development Activity B-7

CONCLUSIONS B-9

RECOMMENDATIONS B-11

Appendix A - DISCOVER II for Postsecondary Institutions B-14
Appendix B - Parent and Student Letters B-17
Appendix C - Project Timeline B-19
Appendix D - Career Development Course Syllabus B-20
Appendix E - CDI Posttest Letter to Students B-21
Appendix F - Survey of Career Development B-23
Appendix G - Survey of Career Development Activity . . . Form and Data (Directive and Non-Directive Groups) B-26
Appendix H - Career Development Inventory Subscales and their Meaning B-30
Appendix I - Career Development Inventory (College and University Form) B-31
Appendix J - Discover II On-Line User Evaluation Form and Data B-49

LIST OF TABLES

Table F-1 - Comparison of University Treatment Groups to Posttest Score (Survey of Career Development) B-25

Table I-1 - Comparison of University Treatment Groups to Posttest Score (Career Development Inventory) B-46

Table I-2 - Comparison of Total University Study Groups t Valuse to Posttest Scores (Career Development Inventory) B-47

LIST OF TABLES (cont.)

Page

Table I-3 - Comparison of University Treatment Groups by Sex Difference to Posttest Scores (Career Development Inventory) B-48

FORWARD

In the proposal submitted to the Pennsylvania Department of Education (PDE) for funding under Chapter 2 of the Education Consolidation and Improvement Act, it was proposed that Millersville University would initiate use of the microcomputerized DISCOVER II Career Guidance system both at its Career Planning and Placement Center and at six local high schools. An overall project design of specific activities was outlined in a one year timeline accompanied by an evaluative procedure to accomplish the following at the designated locations:

1. measure pre and post study level of subject career maturity (high school and university)
2. survey pre and post study counselor attitude toward delivery of career guidance using micro-computer technology (high school)
3. conduct structured observations at regular intervals to assess the degree to which counselors incorporate computer technology into their career guidance function (high school)
4. survey post study career development activities of subjects generated through exposure to various levels of career directed activities (high school and university)
5. assess user evaluation of the effectiveness of the DISCOVER II Career Guidance System in career decision making (high school and university)

Although the high school and university studies were similar in items measured, they differed in location, length of time, population size per group, age of subjects, measured impact of DISCOVER II computerized technology on career guidance operations, and perceived counselor effectiveness in using technology to deliver career guidance services. Therefore for ease and clarity of reporting final results, each study is treated separately in the report with its own data analysis, findings, conclusions and recommendations. The first part (A) of this report deals with the six high schools while the university study is addressed in the second part (B).

Both studies were somewhat patterned after an earlier study completed by Garis[1] at Penn State University in 1982 who measured the efforts of DISCOVER I on career planning of first to seventh term university undergraduate students. Two instruments from that study were used, namely the Survey of Career Development and a later version of Super's Career Development Inventory.

---

[1] Garis, Jeff W. The Integration of the DISCOVER Computer-Based Guidance System in a College Counseling Center: Its Effects upon Career Planning. Career Development and Placement Center, The Pennsylvania State University: University Park, PA, 1982.

ACKNOWLEDGEMENTS

A project of this scope is only successful due to contributions made by many individuals, often behind the scenes. Although their efforts may not be visible on the printed page, they nevertheless provided those key ingredients at crucial points which aided the researchers to plan, implement, manage and otherwise consummate a lengthy list of activities requisite to attaining the project goals.

The following individuals furnished assistance for either the high school or university phase of the study and in many cases contributed to both:

1. At Millersville University: Mr. Phil Bishop, Director of the Career Planning & Placement Center, for initial impetus and on-going administrative support and review of proposed manuscript; Dr. Perry Love, Assistant Provost, for his approval of the initial proposal idea and later assistance with administrative details; Mr. Jerry Burkhardt, Registrar, for help in selecting and registering a sample university population; Dr. Ralph Anttonen, Director of Educational Research, for his counsel on research design and statistical treatment of data; Ms. Kathy Strawser, Graduate Assistant at the Career Planning & Placement Center for her assistance as an instructor in the Career Guidance Course; Ms. Rhoda Anderson, Fiscal Coordinator-Grants & Contracts, for her all-important assistance with fiscal and budgetary matters in dealing with the Pennsylvania Department of Education (PDE); Ms. Jackie Gestewitz, secretary, for typing the proposal; and Mrs. Erma Long and staff of Office Services, for word processing services and patience in the revision of several draft copies that ultimately resulted in this final report.

2. At DISCOVER/ACT: Dr. Joanne Harris-Bowlsbey, Assistant Vice President and Director, for her invaluable information on the DISCOVER II computer-assisted career guidance system, sharing related research and her model for career guidance delivery; Mrs. Carol Rabush, Assistant Director, for her demonstration of the DISCOVER II System and later initial training session for project school counselors; and to the technical staff for assistance with software-related activities.

3. At Penn State University (PSU): Dr. Jeff Garis, Career Counselor at the Career Development and Placement Center, University Park Campus, who supplied a sample copy of his research on DISCOVER I and from which ideas were generated for this study; and Mr. Rob Campbell, Dean of Student Affairs - York Campus, PSU, who provided an initial introduction to DISCOVER I and shared several research instruments with permission to use in this study.

4. At the six local high schools who participated with Millersville University as willing partners in research, a large debt of gratitude is expressed to their administrators who permitted interruptions in student schedules for large group testing, on-site observations of the guidance program and had the foresight to initially become involved with a project designed to upgrade local delivery of career services; and to the local guidance personnel, without whose cooperation the study at the various high schools would not have culminated in success. Our special "thanks" is directed to Daneen Kemple, Denise Zimmerman-Collins, Janice Wiker, Caroline Ellis, Mike Wildasin, and Horace "Bud" Martin, III.

5. Finally, without the financial support of PDE, this project and its subsequent findings would never have been generated. It is our desire that PDE reviews the results closely and makes provisions to implement those findings in other guidance programs state-wide.

The Researchers - June 1984

Dr. Frank E. Rozman
Career Development Coordinator
Career Planning & Placement Center
Millersville University
(Project Director)

Mr. Michael D. Kahl
Graduate Intern
Career Planning & Placement Center
Millersville University
(Project Coordinator)

A. HIGH SCHOOL STUDY

HYPOTHESES
(High School Study)

1. Given three randomly selected groups of high school juniors, the first exposed to computerized career guidance and directive counseling, the second exposed to computerized career guidance alone, and the third receiving no treatment, all groups will perform equally well when measured for career maturity.

2. Sex difference will have little or no appreciable effect on overall measure of career maturity of a random sample of high school juniors.

3. Program of study will have little or no appreciable effect on the overall measure of career maturity of a random sample of high school juniors.

4. Given three randomly selected groups of high school juniors (directive counseling, non-directive counseling or control), all groups will demonstrate little or no appreciable difference in the influence that participation in a series of study-related career development activities (i.e. summer activities, occupational decision making, career assistance received, and usefulness of career resources used) will have upon student career decision-making.

5. As a result of incorporating computer technology to deliver career guidance services, high school counselors will show little or no change in attitude toward effectiveness of the technology in improving overall career guidance services.

6. Introduction of computerized career guidance technology will produce little change in all facets of the local career guidance program as measured through on-site observations.

INTRODUCTION
(High School Study)

Delivery of career guidance has traditionally been one of the weaker functions performed by the secondary school counselor. Due to heavy work loads, high student/counselor ratios, and lack of specialized training in career development for occupations, counselors have tended to frequently neglect this all important area. As a result, secondary students are often required to make uninformed career decisions without appropriate guidance and updated resources.

During the Fall 1982 semester, 24 counselors representing 17 public and private secondary schools in Lancaster County, Pennsylvania attended a demonstration session of the DISCOVER II computerized career guidance system on the Millersville University (MU) campus. During the session a strategy was outlined for local school participation in a computerized career guidance research study. Each school also received a contractual agreement form (see Appendix A) with instructions to have their administration sign and return. Since funding was limited, only six schools and Millersville University could be accomodated in the study. Therefore, order of return determined selection of the six study schools who received computer hardware and software as a participant school following PDE notification of grant approval. The agreement outlined joint MU/LEA (Local Education Agency) hardware purchases and stipulated arrangements for research study data collection for the duration of the grant period.

Counselors were also surveyed at this pre-study orientation session on the status of career guidance practices at their schools using a Technology Grant Questionnaire on Career Services, the results of which only further substantiated the weakness of the career guidance function in the counselor's repetoire of responsibilities (see Analysis and Findings sections).

The six high schools involved with Millersville University in this study were: Columbia High School, Garden Spot Senior High School, Linden Hall School (Private Girls' School), Manheim Township High school, Penn Manor High School and Pequea Valley High School, all located within a radius of 25 miles from Millersville University in Lancaster County.

Population

Subjects chosen for the study consisted of 424 second semester high school juniors enrolled during the 1983 Spring Semester in the five public high schools and one private girls school previously identified. All subjects were both randomly selected and assigned to one of three study groups at each school. The final population contained 154 male and 232 female subjects enrolled in both academic and non-academic programs. The non-academic subjects were further catagorized as (a) Vo-Tech, Home Econ, Industrial Arts, and (b) Business and/or Commercial.

Initial study group sizes at each of the five public high schools were set at: (a) control - 30 subjects, (b) DISCOVER/Directive counseling -25 subjects, and (c) DISCOVER only - 25 subjects. Due to a smaller school population, group sizes at the private girls' school were nine, eight, and eight subjects respectively. At the time of the final CDI posttest, total study population size diminished to 386 subjects due to attrition. Study results are based on this final population size.

Study Design

After grant approval was received from PDE in mid January 1983, the six local high schools were invited to a project orientation meeting (Appendix B) where responsibilities for study design and activities were outlined (see Appendix C for timeline).

During mid-February 1983, the Career Development Inventory (CDI) was administered to all three study groups as a pre-test before any scheduled study activities commenced (Specific group activities are covered in a later section). Appproximately thirteen (13) weeks later in mid-May, the two treatment groups received a first posttest administration of the CDI. The following period of summer vacation had no study-related scheduled activities and was used as a natural time break in the subjects' normal school year schedule.

After returning to classes in September, an additional five (5) weeks of scheduled study activities were permitted for counselors to complete (administering) the designated career services for the two treatment groups. In mid-October 1983, the CDI was administered as a second posttest to the two treatment groups and as an initial posttest to the control group. At this point the Career Development Survey of Activities, designed by the researchers at Millersvlle University, was also administered to all three study groups to measure whether the interim summer may have had an additional influence on career decision making. The instrument also surveyed other assistance and resources used during the study for career decision making by subjects.

Counselors were observed three times by the researchers during the study and data collected on all career guidance aspects of the local programs using the Career Guidance Program Observation Form developed by the researchers. (Descriptions of the above and other measurement procedures are found in the analysis section of this report).

Study Group Activities

1. DISCOVER/Directive Counseling Group - treatment consisted of scheduling students for three or four class length sessions on the DISCOVER II computerized career guidance system and providing, in addition, a selected form of directive career guidance. Counselors were left to choose one or more method(s) from: (a) several group career guidance sessions, (b) individual interview feedback sessions, (c) scheduled counselor interventions at the computer and (d) incorporating CDI test results in individual feedback sessions. The CDI was administered as a pre, post^1 and post^2 measurement of career maturity. The Career Development Survey was administered as a post-study only measurement. All students completed on-line user evaluation of DISCOVER II.

2. DISCOVER Users Only Group - treatment consisted of scheduling three or four class length sessions on the DISCOVER II computerized career guidance

BEST COPY AVAILABLE

system without any accompanying directive guidance activities provided by the counselor. The CDI, Career Development Survey and on-line DISCOVER evaluation were also administered in the same fashion as with the Directive Counseling Groups.

3. Control Group - received a pre and posttest administration of the CDI with no use of DISCOVER II. Here counselors were asked to adhere to the pre-study guidance routine (with this group), omitting any study-generated activities with the exception of testing (CDI and Career Development Survey). Students were told that they would be permitted to use DISCOVER II at a later date as scheduling permitted.

ANALYSIS
(High School Study)

Methods of Data Collection

Several types of descriptive and evaluative data were gathered in relation to this study. The data are divided into two categories; that which deals with the counselor and method of career guidance delivery (descriptive), and that which deals with the corresponding effects of treatment or non-treatment upon student career development (evaluative). The following diagram lists the different methods by which data were gathered and treated timewise during the study:

DATA COLLECTION PROCEDURES
(High School Study)

COUNSELOR/METHOD OF CAREER GUIDANCE DELIVERY	DATA COLLECTION DESIGN/GROUP	TREATMENT METHOD
Technology Grant Questionnaire	Pre-study	$\bar{X}$
Counselor Attitude Survey	Pre & Post Study	$\bar{X}$
Guidance Delivery Model	Mid Study	Matrix
On-site Observation	Pre, Mid & Post Study	$\bar{X}$

STUDENT/CAREER DEVELOPMENT DATA	DATA COLLECTION DESIGN/GROUP	TREATMENT METHOD
Career Development Inventory	a. Pre, post^1 post^2 (D,N) b. Pre, post^1 (C)	Machine scored One-way ANOVA Three-way ANOVA t test
User Evaluation Data	Computer-on-line (D,N) (DISCOVER II System)	$\bar{X}$ $\bar{X}$ of $\bar{X}$
Career Development Survey of Activities	Post Study (D,N)	$\bar{X}$ $\bar{X}$ of $\bar{X}$

D = Directive Group
N = Non-Directive Group
C = Control Group

Technology Grant Questionnaire (Pre-grant)

Prior to grant funding, a questionnaire developed by the researchers at Millersville University to assess the status of career guidance and counselor literacy with technology was administered to a meeting of school counselors interested in grant funding for technology in guidance. The results of this survey were used as part of the underlying knowledge base in preparaton of the grant and as preliminary data for preparing counselors involved in the study for the arrival of DISCOVER II. The results were tallied and arithmetic means computed for all counselors completing the survey (including the six who would later become involved with the study). Table D-1 provides the mean results of all respondants. See Appendix D for copy of questionnaire.

Counselor Attitude Survey

A survey of counselor attitude toward computers, technology, and the relationship of both to the career development effort in the high school was developed by the researchers at Millersville University. This survey was administered to the counselors involved in the DISCOVER II study prior to their involvement and was readministered at the end of the study.

Data from the survey were tallied for the six counselors surveyed and a simple arithmetic mean was computed for each scale prior to and after counselor experience with the DISCOVER II study. Results are presented in Table E-1 with those areas of greatest change highlighted. A sample copy of the instrument is found in Appendix E.

Guidance Delivery Model

Toward the end of the Spring 1983 Semester, each counselor was requested to submit a model of career guidance delivery used at their school. The format used was that first outlined by Dr. Joann Harris-Bowlsbey during the first DISCOVER User's Conference held at Penn State University in May 1983. The model is presented in matrix format listing six (6) components of career guidance (readiness, self information, linkage, occupational information, narrowing and reality testing and implementation plans) matched against five (5) modes of delivery (One-on-one, computer, curriculum, group guidance and printed self help). The most effective combinations are marked for each mode and component (see Appendix F).

On-Site Observations

It was decided that structured observations should be performed at each individual user site to assess the impact of the DISCOVER II technology on each career guidance operation. To that end, researchers developed a structured observation form examining all facets of the career guidance program and providing a means for rating each. (See Appendix G.) Observations were performed prior to delivery of DISCOVER II, before the summer break 1983, and at the end of the study (October 1983). Scale scores were tabulated and a simple arithmetic mean was computed for each. Results are presented in Table G-1 with areas of greatest change indicated. Where results included simple yes or no responses an arithmetic mean was obtained by assigning yes responses a value of two and no responses of value of one. Therefore the closer the mean score for those items is to two, the nearer the observer was able to answer yes for all schools observed.

Career Development Inventory

High school subjects were administered Super's Career Development Inventory (1982) using the high school form on three separate occasions: all groups were tested prior to exposure to DISCOVER II; the two treatment groups were again tested at the end of the spring semester, and all three groups were tested a final time in the early fall (approximately eight months after the initial pretest). Scores were generated for all subjects giving a composite picture of each subject's level of career development according to Super's five dimensions of career development: Planfulness, Exploration, Information, Decision Making, and Reality Orientation. (Note: For purposes of this study, "Career Maturity" is defined by Super[2] as consisting of the above five dimensions, the first two being attitudinal while the last three are cognitive in scope.)

Tests were machine scored by consulting Psychologists Press, Inc. and scores were generated for the five sub scales and three combined scales of the instrument. Scores were entered into the Univac 1400 computer and treated with the Statistical Package for the Social Sciences (SPSS) program to determine levels of significance for the data. Initially a one-way analysis of variance was used to determine if the difference between treatment groups and control was significant. Further, the researchers felt the need to determine the significance of the differences between each treatment group and the control, as well as the difference between the two treatment groups (a comparison not possible with the one-way analysis of variance) and so three individual T-tests of significance were performed. A three-way analysis of variance was also performed to determine the significance of any interaction effect between scores for treatment groups and either the sex or program of study, (two factors found to be significant) of the subjects. Whenever the source of variation for pretest score was found to be $p<.05$ or of greater significance, the posttest score was covaried for pretest score. Final results are presented in Tables I, 1-4 with areas of statistical significance noted. In addition a description of each subscale of the CDI is included in Appendix H. For more detailed information on the Career Development Inventory consult the User's Manual available from Consulting Psychologists Press, Inc. A sample copy of the instrument is included in Appendix I.

DISCOVER II User On-line Evaluation Data

The DISCOVER II software includes an on-line evaluation of user satisfaction with the system. The microcomputer tabulates the results as students complete their use of DISCOVER II and administrators can access the results via the CP/M operating system. (Data for the two treatment groups are blended together at all six schools due to use of a single microcomputer and one set of DISCOVER II software at each school.) A mean of means was tabulated for the results of each question from all six schools. A copy of the instrument and mean data is found in Appendix J.

---

[2] Super, Donald E. "Assessment in Career Guidance: Toward Truly Developmental Counseling." Personnel and Guidance Journal, Vol. 61 (9), May 1983.

Career Development Survey of Activities

The longitudinal time period of the study extended over the summer vacation during which no study activity was scheduled. After the subjects returned for the Fall 1983 semester the two treatment groups continued in their respective scheduled activities. At the conclusion of the study in mid-October 1983, when all subjects were given a final CDI posttest, they were also administered the Career Development Survey of Activities (See Appendix K). The latter instrument measured: (1) whether participation in summer activities had any direct influence on career decision making, (2) where subjects stood at that point in relation to occupational decision making, (3) types and helpfulness of career assistance received prior to the summer break, (4) career resources used most frequently, and (5) what impact DISCOVER II had on user study groups in relation to career knowledge, decision making and overall usefulness.

Although a few questions of the Career Development Survey overlapped some items of the on-line DISCOVER user's evaluation data, the former instrument provided a more in-depth survey of subjects' career-related activities and attitudes during the study. Mean scores were tabulated for each study group per school on all items of the survey. A mean of means was then calculated for each of the three study groups. Results are presented in Table K-1.

RESULTS
(High School Study)

Technology Grant Questionnaire

Counselors were surveyed at the initial pre-study orientation session on the status of career guidance practices at their schools using a Technology Grant Questionnaire on Career Guidance Services. Survey results for 15 respondants identified that:

* 85% had career guidance programs effecting 400 or more students which represented 60% or more of the total student body at their school
* 93% indicated a student/counselor ratio of 300 to 1 or greater
* over half reported that 40% or more of their counselees specifically sought assistance for career guidance
* 80% of the counselors noted spending 30% or less of their time on career guidance concerns
* 52% felt they did not have adequate time to provide student feedback on interest inventories
* 50% reported that 40% of their students received individual interpretations of career inventory data
* 30% spent over 40% of their time counseling college prep students who received career guidance information most frequently

The above pre-study results only confirmed the need to upgrade local career guidance services at the high school level.

Counselor Attitude Survey

The pretest established a baseline by which a comparison with posttest results was made possible in order to determine the assumed effect of participation in the DISCOVER II study. The items referred to below may be found in Table E-1.

Counselors indicated an increase in their use of computer-based systems (Item 7) and a corresponding decrease in their apprehensions about the technical aspects of working with the new technology (Item 10)

Counselors changed from a fairly negative rating of their level of effectivenes and efficiency in providing career guidance service (1.5), to at least an mixed rating of their abilities in this area (2.67) by the end of the study (Item 14).

The counselors seemed to feel that the computer did not help them effectively manage their time, at least not as much as they first anticipated (Item 18), however, a clear increase was shown in counselor evaluation of student satisfaction with DISCOVER II (Items 20 and 21).

Counselors reported increased satisfaction and confidence in their abilities to provide career guidance services (Items 25, 26, 27, and 28), and observed their students to be better prepared career-wise after using DISCOVER II (Items 32-36, 39, and 40).

Counselors also seemed to feel greater satisfaction with their efforts at infusing career guidance and information into the curriculum of their schools (Items 44 and 45).

Counselors reported that they took less time assembling, updating, and organizing career information after the advent of DISCOVER II (Item 46) and they felt a more substantial portion of the career guidance budget in their school was being devoted to updating occupational information (Item 47).

Interestingly, the counselors felt that more of their time was being devoted to administrative assignments and scheduling at the end of the research project (Item 50). It was felt (by counselors and researchers alike) that a great deal of this time was spent in complying with research project requirements. Given a release from schedule interruptions imposed by the study, counselor time would return to a more equitable balance of administrative and guidance duties.

Guidance Delivery Model

Career guidance delivery practices at the six project schools generally followed the recommended model configurations (see Appendix F). Readiness was evenly split between the curriculum and group guidance modes. The computer (DISCOVER II) was basically relied upon to deliver self information, while two schools also used a one-on-one mode and one school incorporated printed self-help. No schools used the curiculum or group guidance methods for helping students identify self information.

Three of the six schools relied solely on the computer (DISCOVER II) for linking self information to occupations while three also utilized printed self help to supplement the computer. All schools used both the computer and printed self help to deliver occupational information.

Five of the six schools helped students with narrowing and reality testing of career choice by one-on-one methods while two schools (one solely) used the curriculum as a delivery mode. It is interesting to note that again no school applied group guidance techniques for this component.

All six schools employed the computer to assist students with career implementation plans. Three schools also used printed self help in addition to the computer.

In those cases where the computer was heavily relied upon to deliver four of the six components of the career guidance delivery model, it was used as a primary source. It also helped several schools to operationalize heretofore absent components of the model.

On-site Observations

Pretest results provided a baseline of comparison with posttest results for career guidance delivery at each user site. A gradual increase was noted in the amount of effort expended by counselors to update themselves on career information (Item E), On-site Observation Results, Table G-1. (All subsequent items refer to the same table.)

An initial decrease in the amount of collaboration between counselors and faculty was more than compensated for in the final measure (Item G). Another interesting effect was the increase in reported evaluation efforts with regard to career guidance (Item I).

Use of multimedia presentations seemed to receive greater attention at first, but diminished by the end of the study (Item K). Response to liaison with Higher Education Agencies varied (Item M).

As far as printed materials are concerned, about half of the user sites had placement information available to students (federal government reports) but at the end of the study none did (Item S12). Fewer homemade materials were found to be in use (S15) as well as fewer self-orientation materials (S13).

Section VII showed that about half of the schools in the project were using the Guidance Information System (GIS) at the beginning of the study but by the end of the study all had switched over to use of DISCOVER II only (Items 1 and 4). This observation was borne out in discussions with the counselors who clearly preferred DISCOVER II to GIS.

There did appear to be a perceptable increase in the use of standardized career development inventories and tests at the end of the project (Section VII, items 1, 4, 8, 9, and 10).

Still another interesting observation came from the tally of "dated" career materials found in the career resource center. Any book, pamphlet, cassette tape, game etc. older than five years that was found on the shelves by the researchers was recorded as "dated" material for that category of information.

By the second observation there was a decrease in the amount of dated material found. However, by the end of the study quantity of dated material had returned to initial measured levels.

Career Development Inventory (High School Form)

Differences between the scores of the three treatment groups on the pretest were analyzed and no significant difference was found as students were randomly assigned to each group. Significant differences were noted at the outset between scores for males and females, with females scoring significantly higher on the knowledge based scales of the Career Development Inventory. These differences remained consistent over the course of the study. Final results covaried for pretest scores are provided in Table I-2.

Significant differences were also noted at the beginning of the study when students were divided according to program of study. Those students involved in "college preparatory" curricula scored higher on virtually every scale of the CDI with the exception of the career planning and world of work scales. Again, these results were consistent for duration of the study and remained significant even when covaried for pretest differences. Final results are provided in Table I-3.

Initially, a one-way analysis of variance was performed on the CDI posttest data resulting in significant differences for the groups on the career planning scale ($p<.05$) and the Career Exploration Scale ($p<.01$). The combined scales also showed significance, ($p<.01$) for the combined attitudinal scale and the combined overall scale. The other scale scores were not significantly different (See Table I-1).

A t-test was then performed on each scale for all three groups in order to determine the significance of individual differences between groups. The non-directive group scored significantly higher than the control group on the two attitudinal scales of Career Planning and Career Exploration ($p<.05$). The combined scales also showed the non-directive group to be superior to the control ($p<.01$) for the combined attitudinal scale and for the overall scale. When the two treatment groups were compared via t-test, the directive group was found to be superior to the non-directive ($p<.05$) on the World of Work Scale. In addition, a trend favoring the directive group was also found on the Career Exploration Scale ($p<.10$). When the directive and control groups were compared, scores for the directive group were significantly higher on all the scales previously reported as significant plus the world of Work scale as well. Trends favoring the Directive group were also evident in the Preferred Occupations Scale and the Career Development Knowledge scale ($p<.10$). For t-test results see Table I-4.

Since significant differences were noted on the pretest with regard to student sex differences and program of study, it was decided that a three-way analysis of variance be performed including those variables to determine the significance of any interaction effect, if present. No such effects were indicated by this analysis.

DISCOVER II User On-line Evaluation Data

On line DISCOVER II user evaluation data collected at the end of the 1983 school year indicated a highly favorable reaction to the system. Approximately 78% of DISCOVER II users indicated it was very or quite helpful. While 81% associated a high degree of enjoyment with the system.

When asked what was the best thing about using DISCOVER II, over 41% cited good information on occupations and schools and 31% stated self information on values, interests and abilities.

Over 81% stated they had no hardware or software program problems in using the system. Approximately 50% indicated they had narrowed their choice to one or several occupations. And when asked what were the chances of repeated DISCOVER II usage, over 83% responded above average to excellent.

Confirmation of activity as a result of using DISCOVER II indicated approximately 28% read or wrote for more information; 56% spoke to a counselor, parent or one employed in an occupation while 34% did none of the above activities. (Percentages in this last category are greater than 100% due to user entry of more than one answer). For total data results, refer to Table J-1.

Career Development Survey of Activities

After a mean of means score was calculated for each of the three study groups, the following results were identified. Subjects in all study groups agreed that paid work experience followed by recreational, leisure time and hobby-related pursuits were the first and second most important factors assisting them with career decision making. Degree of importance assigned to those two factors were consistantly greater in the control group, followed by the non-directive and directive groups in that order. (See Table K-1.) Control group subjects listed travel as being the third most important career decision-making factor while the directive and non-directive groups again listed recreational, leisure and hobby-related pursuits as third in importance with travel being assigned almost equal importance by the directive group. The non-directive group followed by the directive and control groups cited travel as fourth most important with the control group assigning approximately equal weight to volunteer work.

When asked in question two, what impact participation in the identified activities had in career choice clarification, all groups indicated within a range of 44% to 50% that it increased their ability. While between 23% and 30% of those so responding indicated that a paid job experience was the single most influential activity career-wise.

In question four, subjects were required to state, at that point in time, their readiness to make an occupational choice. Approximately 40% of the non-directive, 38% of the directive and 23% of the control group indicated they had made a specific occupational decision, but 76% of the directive and 75% of the non-directive groups stated they had developed a plan to reach their occupational goal in comparison to 69% of the control group.

Asked to identify what type of career assistance was received most frequently, 91% of the directive and 89% of the non-directive groups cited the DISCOVER II computerized career guidance system while individual help with career decision making was ranked second by the same groups 49% and 47% respectively. The control group (44%) listed individual assistance with career decisionmaking first while 49% indicated they received no specific help in this area. Based upon this response, 65% of the directive and 69% of the non-directive groups cited the career assistance provided by DISCOVER II as being most helpful. Both groups listed individual help as being second most helpful with 27% of the directive group, who received additional attention by study design, so indicating as compared to 21% of the non-directive group. Here 46% of the control group listed individual assistance as being most helpful but 35% of their group did not respond to the question.

Helpfulness of the type of career assistance most frequently received by the directive and non-directive groups, i.e. DISCOVER II computerized career guidance, consistantly ranked higher than that received by the control group with the exception of help in selecting a college. A ranking of helpful career assistance is found in Table K-1.

All subjects were asked if during the study they used any career resource materials located in the guidance or career center. Both the directive and non-directive groups indicated that 85% did so while 53% of the control group similarly responded. (Here the first two groups may have misinterpreted the question by not classifying the DISCOVER II system as career resource material, otherwise the response should have been unanimous).

The career resources identified as used most frequently was the DISCOVER II computerized career guidance system by 62% of the directive and 60% of the non-directive groups. The control group identified that 32% of their members used no resources but those doing so most frequently used the college catalogs (31%). Printed career materials were used a distant third by the directive and non-directive groups (20% and 9% respectively). Multi-media resources received virtually no use (see Table K-3).

The remainder of the survey was answered by only the two treatment groups concerning DISCOVER II usage. Both groups strongly agreed that DISCOVER II had helped them (directive 94%, non-directive 85%). In addition 60% of the directive and 51% of the non-directive groups indicated that DISCOVER II was more complete than other career resources they used at their school. Finally, more of both groups preferred using DISCOVER II first before seeing a counselor as the preferred method of receiving career assistance.

CONCLUSIONS
(High School Study)

Hypothesis One

Based upon collected data, treatment groups exposed to DISCOVER II scored significantly higher than non-treatment control subjects on the Career Planning, Career Exploration, Career Development Attitude and Career Orientation Total Scales of the CDI. The directive group scored significantly higher than the control group on five of the eight CDI scales and showed trends toward being significant on two additional scales. Comparison of the two treatment groups produced a significant difference in favor of the directive groups on the World of Work Scale and approached significance for Career Exploration.

DISCOVER II has a positive effect on career maturity (as measured by the CDI). When DISCOVER II was combined with some form of directive counseling, subjects demonstrated a higher degree of career maturity than those using DISCOVER II alone for areas of awareness and occupational knowledge in career planning. When the above results were compared with the no treatment control, the directive and non-directive groups showed a higher measured level of career maturity. Therefore, the null hypothesis stating all groups will perform equally well when measured for career maturity is rejected.

Hypothesis Two

Measurement of career maturity based on sex difference showed that female subjects scored significantly higher than males on the Decision Making, World of Work and the Career Development Knowledge Scales of the CDI. The latter scale is a combination of the first two.

The above measures are basically cognitive in nature and assess career problem solving and awareness of occupational knowledge in career planning. The results are determined from aggregate data of all three study groups. No attempt was made to analyze scores of the three separate study groups. We can conclude that sex difference does have a significant result, however slight, on the cognitive aspects of career maturity as measured by the CDI. However, degree of career maturity based upon the attitude scales of the CDI (Career Planning and Career Exploration) were not significantly different when measured for sex difference in all three study groups.

Although sex difference resulted in some significant difference on Decision Making and World of Work, the two cognitive dimensions of career maturity, the degree of significance observed was not overwhelmingly evident. Therefore, results of sex difference on career maturity for a random sample of high school juniors is inconclusive as defined by the Career Orientation Total scale of the CDI. The original null hypothesis is therefore not rejected based upon the above findings.

Hypothesis Three

When subjects were separated by program of study and overall CDI results analyzed, a significant difference was found among the academic and non-academic groups on every scale of the CDI. Academic program subjects scored higher than non-academic program subjects on six of the eight CDI scales with the Career Planning and World of Work scales being the exception.

The degree of significance found ($p. < .01$) on the Career Orientation Total scale indicates that program of study does have a significant effect on measurement of career maturity for a random sample of high school juniors. The original null hypothesis is therefore rejected.

Hypothesis Four

While all three study groups agree on the importance of paid work experience followed by assorted recreational pursuits as being most influential in career decision making, the control group subjects consistently rated those activities higher. All study groups were again in virtual agreement that paid work experience was most influential career-wise. However, specific occupational decisions were declared by a substantially higher segment of the two treatment groups who also more frequently indicated developing a plan to reach an occupational goal.

When asked to identify the most frequently received and helpful form of career assistance, both treatment groups cited DISCOVER II while the control group identified individual help. It is interesting to note here that approximately half of the control group indicated receiving no career assistance.

The effects of career assistance received was consistently ranked substantially higher by both treatment groups when compared to the control group in several areas related to career decision making. In comparing the treatment groups, the directive group rated self-understanding and required occupational preparation higher than the non-directive group who in turn ranked occupational clarification as being more helpful. A substantially greater number of the treatment groups cited use of career resources materials in the local guidance resource center than did the control group. When identified, the treatment groups less frequently cited printed material use as compared to DISCOVER II. The direct opposite was true for the control group, a large portion of who indicated using no resources at all.

A review of the above results shows that participation in a series of study-related career development activities had a more positive influence on career decision making by members of the two treatment groups. The original null hypothesis is therefore rejected.

Hypothesis Five

As a result of using DISCOVER II to deliver career guidance services, counselors in the six study schools exhibited more of a positive attitude to a majority of items surveyed. In the area of computerized guidance systems, the counselors had decreased apprehensions about using technology or seeing it as a job threat. They expressed more satisfaction with their efficiency and effectiveness of delivering career services and saw the computer as a means of better performing repetitive career guidance tasks in a format preferred by students.

However, negative attitudes were expressed for the computer relieving counselors of routine duties, providing more time for professional counseling activities and better time management. Here the counselors were possibly reacting to the increased amount of time that DISCOVER II forced them to spend on a guidance function that prior to the study was not allocated as much time in their daily routine. Also, they were using career guidance software solely and not other data base management or recordkeeping programs designed to improve time management of counselor administrative functions.

When asked to assess career guidance services the counselors responded positively to a slightly increased ease of keeping updated on occupational information. They were still undecided on whether they had more time to see all students requesting career guidance assistance even though the change was in a positive direction. Less time was available to see students needing help with educational and occupational plans but there was a positive gain in encouraging students to select appropriate programs of study. Although counselors were still dissatisfied with degree of career counseling services provided, they nontheless indicated a positive shift in attitude.

Regarding observations of student career development activities, counselors felt students were: (a) better able to identify satisfaction wanted in an occupation, (b) make more realistic occupational choices, (c) describe more career alternatives, (d) have less difficulty formulating appropriate career questions, (e) were better able to state sound reasons for occupational preferences, and (f) plan more effectively to reach stated occupational goals. Although still undecided as to whether students exhibited an awareness of a career decision-making process, the counselors shifted their attitude in a positive direction on this item.

Concerning other personnel and resources at their school, although counselors showed an increase in positive attitude toward: (a) teacher efforts to enhance career development aspects of instruction, and (b) rate at which occupational information is being infused into the curriculum by faculty, overall attitude was still at a low level of agreement in terms of the degree to which these activities were taking place.

Counselors thought it was less of a time consuming task for them to organize and deliver career services for easy student retrieval but felt a substantial segment of the guidance budget was allocated to assembling and updating occupational information.

Timewise, the counselors felt they spent more time on scheduling and other administrative assignments. This factor might have been increased due to the additional demands made in this area for the duration of the research study. After reviewing the above results of incorporating computer technology to deliver career guidance services, one can conclude that overall it produced a positive change of attitude in counselors' perception of its effectiveness to provide such service. The original null hypothesis that little or no change in counselor attitude would occur as a result of using the technology is therefore rejected.

Hypothesis Six

On-site observations were used to detect whether change occurred in various facets of the guidance programs (activities performed, resources employed and use of facilities) as a result of introducing DISCOVER II. Counselors slightly increased their efforts to update themselves on career information and were seen to collaborate more with administrators in career guidance activities. More effort was expended by counselors to evaluate their effectiveness in career guidance delivery practices.

In the area of student activities, outside of using DISCOVER II, little change was noted for increased use of multi-media resources or student reliance on counselor assistance in using the resources.

Use of community resources, specifically counselor contacts with local employers decreased slightly in frequency along with amount of student experiential learning experiences employed.

Placement and follow-up activities showed an initial low level and a further decrease was evident in generating placement data with most effort here concentrated on college placement records.

Physical plant usage remained virtually unchanged over the period of the study as did the degree of change in which printed and multi-media resources were employed. Placement reports, vacancy postings and locally-prepared self-help materials were items that declined the most in use.

There was an increase in the use of standardized tests, especially the SDS and the GATB. By using DISCOVER, the UNIACT inventory was automatically incorporated into the program as an on-line feature.

As a whole, reliance on "dated" resource materials did not permanently decrease by the end of the study as counselors continued to use it after introduction of the DISCOVER II computerized career guidance technology. It is interesting to note that all six schools heavily relied on the computer as a major delivery mode for self information identification and linkage to occupations, basic occupational information and development of career implementation plans.

Based upon on-site observation of career guidance program change the original null hypothesis is rejected.

RECOMMENDATIONS
(High School Study)

1. DISCOVER II technology should be extended for use with all high school students as an on-going diagnostic counseling procedure to enhance the students' career development process at different stages in that sequence of growth.

2. Counselor intervention using directive guidance procedures should be utilized in conjunction with DISCOVER II to maximize its effect on student career development results. Method of intervention should provide positive student reinforcement in close proximity to on-line results experienced by students.

3. Method of counselor directive guidance intervention efforts should be expanded to make maximum use of resources and personnel already in place at the high school.

4. Counselors should not utilize computer-assisted career guidance technology as a substitute for increased personal student contact or follow-up. (High tech requires increased high touch.)

5. Counselors should either update or discard dated hardcopy shelved resources to avoid providing conflicting information supplemental to data stored in DISCOVER II.

6. More effort should be expended by counselors and their administrators to increase faculty members' knowledge of DISCOVER II's capabilities through hands-on use while encouraging a linkage with the curriculum as a supplemental career guidance delivery mode for student self-information and reality testing experiences.

7. Counselors should suppliment DISCOVER II feedback to students through more use of group guidance techniques rather than favoring a one-to-one method for those repetitious generic components of career guidance delivery.

8. Counselors should explore use of additional software applications designed to streamline the administrative and recordkeeping functions of their position in order to free them for more personal contact with their counselees while inducing better time-management procedures.

9. Further evaluation should be made of DISCOVER II's effectiveness with High School Freshmen and Sophomores to determine its applicability for assisting student readiness to make rational program of study selections.

10. Counselors should be prepared to spend considerable time prior to installation of computer assisted career guidance technology, becoming familiar with its applications and planning for its optional integration into the various facets of existing career services.

11. Counselors should design and establish an on-going evaluation of DISCOVER II's impact on the various stages of their career guidance delivery model with provisions for change as they become evident.

12. Counselors should conduct a follow-up of students involved in this study to ascertain career progress in comparison to previous students not exposed to the DISCOVER II technology.

13. As advanced technology makes possible new and expanded enhancements of the DISCOVER II data base (i.e. localized information, video disc system, adult users, etc.), local administration should provide necessary financial support to insure system updating.

14. Counselors should consider introducing some of the standardized tests and inventories, whose scores are accepted by the DISCOVER II system, to provide objective input on each student for subsequent system analysis of test results.

15. Counselors should encourage student participation in some form of experiential learning while in high school to provide them with a realistic environment for strengthening career decision making.

16. In those study schools whose professional guidance staff consists of more than one counselor, every effort should be made to train colleagues to use and apply DISCOVER II in a systematic fashion with their counselees as part of the daily guidance routine.

APPENDICIES
AND
TABLES

APPENDIX A

TECHNOLOGY/SPECIAL INNOVATIVE PROJECTS GRANT TO IMPROVE LOCAL EDUCATION PRACTICES

COOPERATIVE AGREEMENT BETWEEN MILLERSVILLE STATE COLLEGE AND ______________________________ (LEA)

A. As a condition of participating in this project funded by the Pennsylvania Department of Education under the Education Consolidation and Improvement Act of 1981, Chapter 2, the above identified LEA agrees during the project's duration to:

1. Identify a member of the guidance staff who will function as the local coordinator for project activities.

2. Provide full-time access to a micro-computer in the guidance office that will run the DISCOVER career guidance software.

3. Insure availablility of DISCOVER program to students on a continuous basis as part of the school's career guidance program.

4. Participate with staff from the Career Planning and Placement Center of Millersville State College (MSC) in any necessary training and in-service sessions designed to prepare a local counselor to gain appropriate technical skills that are requisite for making the DISCOVER system operational in the LEA.

5. Cooperate with staff from the Career Planning and Placement Center of MSC to arrange controlled conditions at the LEA for the systematic collection of data in order to document program effectiveness.

6. Purchase the following hardware and software to upgrade the TRS-80 Model II Microcomputer:

ITEM	EST. COST*
a. Model II Disk Expansion Unit	$1150.00
b. Pickels & Trout CP/M 2.2 Operating System	$ 200.00

7. Gain the necessary LEA organizational support to enable the program to continue as part of the career guidance program after project termination. (There is an annual maintenance, royalty, and data file update fee of $750.00* for the software which is on lease. Otherwise software must be returned to the vendor.)

NOTE: Any additional optional operational supplies (back-up diskettes, dust covers, etc.) are the responsibility of the LEA should they be desired.

B. In turn, as the legal project applicant (fiscal agent) and overall administrative unit, Millersville State College agrees to:

1. Serve as the purchasing agent for project resources to include:

ITEM	EST. COST*
a. TRS-80 Model II Micro-computer	$2975.00
b. DISCOVER II Software	$ 800.00
c. Instructional supplies to include in-service, staff development and standardized career inventories.	

2. Schedule and provide necessary in-service education to:

   a. orient local program coordinator (counselor) to the DISCOVER system and project activities/guidelines

*Price subject to change

b. train local program coordinator to use the DISCOVER system with assigned students
c. assist local program coordinator plan, organize and develop a design for in-house collection of project data for a final report

3. Provide in the field consultation and assistance.

NOTE: If in the event that MSC does not receive the grant applied for, this agreement becomes null and void. Otherwise the grant will run for a full calendar year, commencing upon receipt of funds on or after January 1, 1983. Items purchased by MSC under this project will be considered on permanent loan to the LEA if the following condition are maintained:

a. Items purchased by MSC are to be physically located in the guidance office.
b. Items purchased by MSC are to be used exclusively for guidance functions.
c. Items purchased by MSC will satisfy points a & b above for the duration of the funded project and permanently thereafter. (Failure to meet the above conditions may jeopardize the permanent loan agreement.)

C. CERTIFICATION BY AUTHORIZING OFFICIAL

1. Local Education Agency ______________________________
Name of Agency

Name (typed)	Title	Phone Number
Signature	date	

2. Millersville State College

Name (typed)	Title	Phone Number
Signature	date	

APPENDIX B

MSC
MILLERSVILLE
CAREER PLANNING, PLACEMENT AND COOPERATIVE EDUCATION
Millersville State College
Millersville, PA 17551

September 30, 1982

The Career Planning and Placement Center of Millersville State College is in the process of applying for a grant to develop a training program to assist local secondary counselors improve career guidance practices. Utilizing the expanding micro-computer technology, the Career Planning Center of MSC invites local guidance personnel to participate in training to upgrade this phase of your guidance function.

Based upon grant approval, the Career Planning Center will provide the following services, at no charge, to each participating local guidance program:

1. career guidance software (for use on your micro-computer)
2. necessary adaptations to make your micro-computer compatible with program software of DISCOVER II
3. training in use of the computerized career guidance program
4. in the field assistance

In order to participate (a) your guidance office must have access to one of the following micro-computer models: TRS-80, MODEL II: TRS-80, Model 16; APPLE II; IBM Personal Computer; (b) be willing to assist in data collection during the project to assess impact of the technology on effectiveness of local career guidance services.

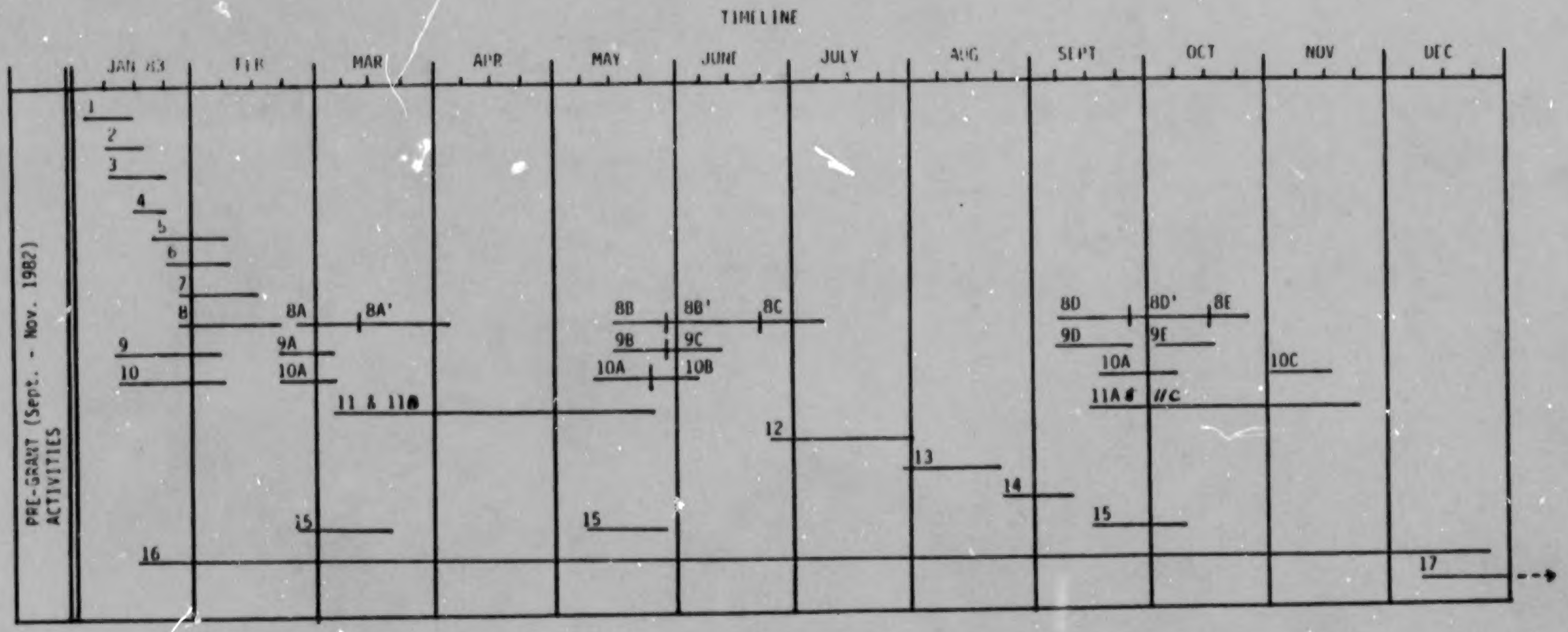
We have arranged for a demonstration of the system on October 15, 1982 at 10:00 a.m. in the large media room of Stayer Research and Learning Center (see enclosed map). In order to make the appropriate arrangements, we need to know whether or not you will attend. Please call us (872-3312) by October 13 to indicate your plans. Attendance at the session does not obligate you in any manner, but should help to clarify any questions.

Should you not be able to attend the demonstration/information session, I have enclosed a copy of the grant abstract and description of the DISCOVER II program. Hope to hear from you in the near future.

Very truly yours,

Frank E. Rozman, Ed.D
Career Development Coordinator

FER:jmg



PRE-GRANT ACTIVITIES

PG-1 Visit to vendor of DISCOVER
PG-2 DISCOVER demonstration at PSU
PG-3 Demonstration/orientation session
PG-4 Counselors administered career guidance practices survey
PG-5 Contracted agreement forms returned with administrator signature

GRANT PERIOD ACTIVITIES

1. Notification of results from PDE
2. LEAs contacted
3. Equipment teaching supplies and career inventories ordered
4. Initial counselor orientation meeting conducted to set project timetable, and planning and management of LEA activities
5. Student treatment and control groups
6. Equipment received and installed
7. Hands-on in-service for use of DISCOVER II System at each LEA
8. Career Development Inventory received
8A. First administration of CDI to all student groups (pretest)
8A.' Tests sent for scoring analysis/results returned for interpretation
8B. First CDI postest administered
8B.' Postest sent for scoring analysis
8C. CDI test data statistical analysis of career maturity gain scores
8D. Second CDI nostest administered
8D.' Second postest sent for scoring analysis and interpretation of results
8E. CDI test data statistically analyzed for "Hawthorn" effect error
9. Counselor attitude survey instrument developed
9A. Initial administration of counselor attitude survey
9B. First postest administration of counselor attitude survey
9C. Analysis of counselor attitude survey
9D. Second counselor attitude survey postest administered
9E. Statistical analysis of counselor attitude survey
10. Counselor behavior observation forms developed
10A. Periodic counselor observations
10B. Data Analysis of counselor observations
10C. Final data analysis from counselor observations
11. Phase I treatment groups using DISCOVER II alone
11A. Phase II treatment groups using DISCOVER II alone
11B. Phase I treatment groups using DISCOVER II/counselor assistance
11C. Phase II treatment groups using DISCOVER II/counselor assistance
12. Summer training of teacher and administrators on DISCOVER II and student summer classes use DISCOVER II (tentative)
13. In-service on local data entry procedures into DISCOVER II program along with retrieval methods
14. Counselor support session for maintenance of project activities and internal change agent training conducted
15. Counselor interviews/trouble shoot problems
16. Technical assistance, support
17. All project data analyzed & final report written

BEST COPY AVAILABLE

APPENDIX D
TECHNOLOGY GRANT QUESTIONNAIRE ON CAREER GUIDANCE SERVICES

N = 15

NAME ______________________ SCHOOL ______________________

____ 1. How many students are effected by the career guidance service in your school?
(A) 1-200, (B) 201-400, (C) 401-600, (D) 601 or more
1 1 2 11

____ 2. What percentage of the total school population are represented in your answer to question #1?
1-30%, 1-50%, 1-60%, 1-90%, 2-95%, 9-100%

____ 3. What is the student counselor ratio in your school?
(A) 50/1, (B) 100/1, (C) 200/1, (D) 300/1, (E) 400/1, (F) 500/1, (G) over 500/1. R
1 1 6 4 2

____ 4. Estimate the percentage of your assigned counselees that come to you specifically for career guidance? 1-20%, 4-25%, 1-30%, 1-35%, 2-40%, 1-50%, 2-60%, 2-100%, 1-NR

____ 5. What percentage of your time is typically spent on career guidance concerns each day? 1-5%, 1-10%, 3-20%, 3-25%, 4-30%, 1-50%, 1-75%, 1-NR

____ 6. What is the grade level of the students with whom you work?
K - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12
7-12 (2), 9-12 (9), 9-10 (1), 10-12 (1), 11-12 (1), NR (1)

____ 7. What is the major means of dispensing career information to students in your schoo
(A) Computer assisted information system, (B) Shelf literature, (C) Speakers from the community, (D) other: ____________
A (2), B (6), A+B (5), B+C (2)

____ 8. How often does the average student utilize this career information?
(A) Everyday, (B) Once a week, (C) Once a month, (D) Once a semester, (E) other: ____
1 4 6 3

____ 9. Which of the following student groups at your school receive career guidance servi s most frequently?
(A) College Prep, (B) Vocational, (C) General Studies, (D) Business, (E) other: ____
6 1 1 3
A+B (2), B+D (1), A+B+D (1)

____ 10. Who is responsible for updating career guidance resources in your school?
(A) The counselor, (B) Another staff member, (C) Periodic updating provided by information source, (D) Other: (technicians, secretaries, etc)
A (9), D (4), A+D (2)

____ 11. How frequently are these resources updated?
(A) Monthly, (B) Bi-annually, (C) Yearly, (D) Other: ____________
15

12. How do the following groups view career guidance in your school?

	CRUCIAL	IMPORTANT	HELPFUL	NOT IMPORTANT
Administration	(1)	(9)	(2)	( )
TEACHERS	( )	(6)	(6)	( )
Parents	(5)	(5)	(2)	( )
Students	(2)	(7)	(3)	( )

____ 13. As to guidance function, do counselors in your school specialize or are they genera ists?
(A) Specialists, (B) Generalists
1 14

____ 14. What was your most effective preparation for career guidance?
(A) Work experience, (B) College course work, (C) Self-taught, (D) Personal contacts with industry, (E) Other: ____________
A (1), B (1), C (4), D (1), E (1) Other (1), A+D (1), A+C (1), A+D (2), ACD (1)

BEST COPY AVAILABLE

QUESTIONNAIRE (con't)

_____ 15. How comfortable are you with your current state of knowledge regarding career guidance?
(A) Quite comfortable, (B) Comfortable, (C) Uncomfortable, (D) Concerned NR
2 7 3 1 1

_____ 16. How are you updating your knowledge of the career guidance field?
(A) Additional course work, (B) Life/world experience learning, (C) outside reading,
(D) Pertinent Journals, (E) Other:
A (1), B (1), C (2), E (1), B+C (1), C+D (2), All (1), ABC (1), CDE (1), NR (2)

_____ 17. Which of the following career inventories do you provide for your students?
(A) Career Maturity Inventory, (B) Harrington/O'Shea Decision-making System
(C) Kuder Interest Survey, (D) Self-Directed Search (Holland)
(E) Strong/Campbell Interest Inventory, (F) Other: Diff. Apt. Test (1)
C (5), C+D (2), E+D (1), NR (3), NONE (1) Worker Trait System (1)

_____ 18. Do you have time to personally discuss the results of these instruments with each student?
(A) Yes, (B) No NR Groups
4 8 3 1

_____ 19. What percentage of your time is devoted to career counseling of students destined for college? 1-5%, 2-10%, 2-15%, 1-20%, 1-30%, 1-40%, 2-75%, 5-NR

_____ 20. What is the current status of computer technology in your school guidance program in terms of budget?
(A) Funds have been allocated, (B) Funds are avilable, but limited, (C) No Funds have been allocated A (2), B (5), C (4), A+B (1), NR (3)

_____ 21. What is the status of computer technology in your school in terms of administrative support?
(A) Administration supports technology, (B) Administration is undecided regarding use of technology, (C) Administration opposed to the use of technology
A (8), B (2), C (1), A+B (1), NR (3)

_____ 22. What is your current status of computer literacy?
NO EXPERIENCE with computer 1 2 3 4 5 6 7 CAN INTERACT with computer to retreive DATA
(4) (1)(4)(1)(1)(2) NR (2)

_____ 23. How much additional training do you feel you will need to become competent on a micro-computer to train other to use the DISCOVER program?
EXTENSIVE TRAINING 1 2 3 4 5 6 7 VIRTUALLY NO RETRAINING
(2)(1)(4)(2)(2) NR (4)

_____ 24. Would your school be willing to sign an agreement to the effect that the DISCOVER system will continue to be used as a part of career guidance after the project's termination?
(A) Yes, (B) No, (C) Uncertain NR
5 7 3

_____ 25. What percentage of the students assigned to you receive an individual interpretation of career inventory data as it relates to occupational choice?
(A) 10-25%, (B) 26-40%, (C) 41-55%, (D) 56-70%, (E) over 70% 100% NR
4 1 1 3 1 1 3

_____ 26. Who has major responsibility for relating career data on individual students, gathered through standardized inventories, to available career information.
(A) The counselor, (B) The student, (C) Another staff member, (D) Other: NR
11 2 2

_____ 27. By what means are the various parts of the career guidance system in your school (interest inventorying, values clarification, SKILLS identification, decision-making, information seeking) integrated for the students?
(A) The counselor performs this function individually, (B) The Counselor performs this function in groups, (C) A form provided to the students brings this all together, (D) The process is graphically displayed in the counselor's office, (E) The relationship of the separate parts is readily apparent, there is no need for integration, (F) Other: A (4), A+B (5), B+C (1), B (2), NR (3)

APPENDIX E

____
DATE

CAREER GUIDANCE
COUNSELOR ATTITUDE SURVEY

NAME ______________________________ SCHOOL ______________________________

DIRECTIONS: SELECT THE ONE OPTION IN EACH QUESTION THAT BEST DESCRIBES A CURRENT SITUATION AT YOUR SCHOOL AND/OR ATTITUDE YOU HOLD.

1. What percentage of your time is spent on career counseling (as opposed to personal counseling, academic advisement, etc.)?

   (A) none (B) 25% or less (C) 26-50% (D) 51-75% (E) 76-100%

2. On the average, how many students do you see each week for career counseling?

   (A) 1-10 (B) 11-20 (C) 21-30 (D) 31-40 (E) 41 or more (ESTIMATED FIGURE _____)

3. Do you have access to some form of computerized career guidance information in your school?

   (A) yes (B) no (IF YES, NAME OF SYSTEM ______________________________)

PLEASE INDICATE THE DEGREE TO WHICH YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS ABOUT COMPUTERIZED CAREER GUIDANCE SYSTEMS*

STRONG AGREE = SA AGREE = A UNDECIDED = UN DISAGREE = D STRONGLY DISAGREE = SD

		SA	A	UN	D	SD
4.	Computer-based guidance systems are a passing fad.	__	__	__	__	__
5.	Computerized guidance systems can relieve counselors of many routine duties, leaving more time for professional counseling activities.	__	__	__	__	__
6.	Computer-based guidance systems are a threat to the jobs of counselors.	__	__	__	__	__
7.	Currently, I make little use of computer-based guidance systems in my work with students.	__	__	__	__	__
8.	Computer-based guidance systems are capable of helping students make rational career decisions.	__	__	__	__	__
9.	Computerized guidance services will be effective with all students.	__	__	__	__	__
10.	I have no apprehensions about the technical aspects of delivering computerized career guidance.	__	__	__	__	__
11.	Computers are capable, at best, of providing students with career assistance in an impersonal fashion.	__	__	__	__	__
12.	Using an interactive computerized career guidance system can change my current style of delivering career counseling on a one to one basis.	__	__	__	__	__

	SA	A	UN	D	SD
13. Students who use an interactive computerized career guidance system show greater career maturity.	___	___	___	___	___
14. I am completely satisfied with my current level of efficiency and effectiveness in providing career guidance to my students.	___	___	___	___	___
15. Computerized guidance services are the best way to provide information about colleges/careers.	___	___	___	___	___
16. My current knowledge/use of interactive computerized career guidance services indicates that they do a better job of providing students with career information then they do in assisting students with analytical career decision-making skills.	___	___	___	___	___
17. Computerized guidance services aid the values clarification process of students.	___	___	___	___	___
18. Computerized guidance services allow counselors to more effectively manage their time.	___	___	___	___	___
19. Computerized guidance services allow me to reach more students in my career counseling.	___	___	___	___	___
20. Students prefer to use computerized guidance services to secure basic assistance with career choice as compared to more conventional means.	___	___	___	___	___
21. Computerized career guidance services are frequently better able to transmit career guidance by virture of their ability to perform repetitive tasks without tiring.	___	___	___	___	___

THE FOLLOWING STATEMENTS REFER TO THE CAREER GUIDANCE SERVICES IN YOUR SCHOOL AT PRESENT. PLEASE STATE THE DEGREE TO WHICH YOU AGREE OR DISAGREE WITH THESE STATEMENTS.

	SA	A	UN	D	SD
22. Getting students to read occupational information is no problem.	___	___	___	___	___
23. It is easy for me to keep up to date on occupational information.	___	___	___	___	___
24. Identifying sources of occupational information is difficult.	___	___	___	___	___
25. I have no difficulty finding time to see all students who seek my assistance with career guidance.	___	___	___	___	___
26. Identifying those students who need help with their educational and occupational plans is a problem.	___	___	___	___	___
27. I have little difficulty encouraging students to select appropriate programs of study to meet their career goals.	___	___	___	___	___

	SA	A	UN	D	SD
28. I am satisfied with the degree to which I provide career counseling to my students.	___	___	___	___	___

THE FOLLOWING STATEMENTS REFER TO OBSERVATIONS MADE OF THE STUDENTS YOU COUNSELOR.

	SA	A	UN	D	SD
29. Students frequently utilize printed occupational information (D.O.T., Occupational Outlook Handbook, etc.)	___	___	___	___	___
30. Students frequently utilize college catalogues and other information on higher education.	___	___	___	___	___
31. I am satisfied with the level of sophistication evident in student group discussions about career values and decisions	___	___	___	___	___
32. Students are clearly able to describe the satisfactions they want from our occupation.	___	___	___	___	___
33. Students are able to realistically state an occupational choice in line with their skills, values and interests.	___	___	___	___	___
34. Students are able to describe alternative careers appropriate to their skills, values, and interests.	___	___	___	___	___
35. Students have difficulty formulating appropriate questions regarding their career concerns.	___	___	___	___	___
36. Students are able to state sound reasons for their occupational preferences.	___	___	___	___	___
37. Students are able to decide on appropriate programs of study for each occupation being considered.	___	___	___	___	___
38. Students realistically assess their chances for success in the programs they are considering.	___	___	___	___	___
39. Students are able to plan effectively to reach their stated occupational goals.	___	___	___	___	___
40. Students exhibit an awareness of a process for career decision-making.	___	___	___	___	___
41. Students currently have actual experience with their preferred occupational choices through means such as direct observation, interviewing, or out of school experiential learning opportunities.	___	___	___	___	___
42. Students can identify and describe alternate routes to achieve a stated occupational choice.	___	___	___	___	___

THE FOLLOWING QUESTIONS REFER TO OTHER PERSONNEL AND RESOURCES ASSOCIATED WITH YOUR SCHOOL.

	SA	A	UN	D	SD
43. With my assistance faculty members frequently provide career guidance to their students by identifying occupations related to their area of instruction.	___	___	___	___	___
44. I am satisfied with my individual efforts with teachers to enhance the career development aspects of their instruction.	___	___	___	___	___
45. I am satisfied with the rate by which occupational information is being infused into the existing curriculum at my school by faculty members.	___	___	___	___	___
46. It is a time consuming task for me to assemble, update, and organize career information for easy retrieval by students.	___	___	___	___	___
47. A substantial segment of the guidance budget in my school is devoted to assembing and updating occupational information.	___	___	___	___	___
48. I am satisfied with the degree to which my administrators can assess the effectivess of career guidance services at my school	___	___	___	___	___
49. The career guidance program in our school incorporates the parents of the students I counsel.	___	___	___	___	___
50. A major portion of my time is taken up with scheduling and other administrative assignments.	___	___	___	___	___

*Adapted in part from: "SIGI Evaluation Questionnaire for Counselors", SIGI: Field Test and Evaluation of a Computer-Based System of Interactive Guidance and Information. Chapman, Warren; and others. Educational Testing Service, Princeton, NJ. May 1977.

Table E-1

Career Guidance
Counselor Attitude Survey
N=6

COUNSELOR ATTITUDE TOWARD:[a]	Point of Assessment ($\bar{x}$) PRE-STUDY	POST-STUDY	OVERALL CHANGE (±)
Computerized Career Guidance Systems			
4. passing fad	1.50	1.50	.0
5. relieve routine duties	4.00	3.40	- .60*
6. job threat	1.67	1.20	- .47*
7. make little use of	4.60	1.50	-3.10*
8. help with student career decisions	4.00	4.16	+ .16
9. effective with all students	2.67	2.50	- .17
10. no apprehension to deliver guidance	2.50	4.16	+1.67*
11. provide impersonal career assistance	3.00	2.67	- .33
12. change delivery style of career counseling	3.83	4.00	+ .17
13. greater student career maturity	3.17	3.50	+ .33
14. satisfied with current career guidance	1.50	2.67	+1.17*
15. best college and career information	2.84	3.17	+ .33
16. career information vs. career decision-making	3.33	3.17	- .16
17. aids student values clarification	3.17	3.50	+ .33
18. more counselor time management	3.50	2.50	-1.00*
19. reach more students for career counseling	3.67	3.33	- .34
20. student preference over conventional means	3.67	4.33	+ .66*
21. better performs repetitive tasks	3.67	4.16	+ .49*
Career Guidance Services			
22. persuading students to read occupational information is no problem	1.83	2.00	+ .17
23. keeping updated on occupational information is easy	2.16	2.67	+ .51*
24. difficult to identify occupational information sources	2.50	2.67	+ .17
25. no difficulty seeing all students who seek career guidance	2.00	2.67	+ .67*
26. problem identifying students needing help with educ. & occupational plans	3.67	2.33	-1.34*
27. little difficulty encouraging students identify appropriate study programs	2.83	3.33	+ .50*
28. satisfied with degree of career counseling service provided to my students	1.83	2.50	+ .67*

[a] Consult Appendix E for complete questions

*Areas of greatest change

NOTE: Items 1-3 are found in Appendix E (results)

Table E-1 (cont.)

Career Guidance
Counselor Attitude Survey
N=6

COUNSELOR ATTITUDE TOWARD:[a]	Point of Assessment ($\bar{x}$) PRE-STUDY	POST-STUDY	OVERALL CHANGE (±)
Observations of Student Career Development Activities			
29. frequent use of printed occupational information	2.33	2.67	+ .34
30. frequent use of college catalogs	3.67	3.67	.0
31. student sophistication on career values and decisions	2.50	2.67	+ .17
32. students can identify occupational satisfaction	2.67	3.33	+ .66*
33. students realistic occupational choice	2.50	3.33	+ .83*
34. student description of alternative careers	2.17	3.17	+1.00*
35 student difficulty with forming career questions	4.00	2.83	-1.17*
36. students are able to state reasons for occupational choice	2.33	3.17	+ .84*
37. students are able to select a program of study for occupations considered	3.00	3.33	+ .33
38. students can assess chances of success in chosen program of study	2.83	2.83	.0
39. students can effectively plan to reach occupational goals	3.00	3.67	+ .67*
40. student awareness of the career decision-making process	2.17	3.00	+ .83*
41. student current actual experience with preferred occupational choice	2.67	3.00	+ .33
42. students can identify alternate career routes	2.17	2.33	+ .16
Resources/Personnel			
43. faculty provide occupational guidance	2.50	2.33	- .17
44. satisfied with my encouragement of faculty career guidance	1.83	2.50	+ .67*
45. satisfied with rate of occupational information infusion into the curriculum	2.00	2.50	+ .50*
46. career information delivery is a time consuming task	4.33	3.83	- .50*

[a] Consult Appendix E for complete questions

*Areas of greatest change

Table E-1 (cont.)

Career Guidance
Counselor Attitude Survey
N=6

COUNSELOR ATTITUDE TOWARD:[a]	Point of Assessment ($\bar{x}$) PRE-STUDY	POST-STUDY	OVERALL CHANGE (±)
Resources/Personnel (cont.)			
47. substantial portion of guidance budget is used for updating occupational info.	2.67	3.17	+ .50*
48. satisfied with administrative assessment of career guidance	2.33	2.50	+ .17
49. career guidance program incorporates parents of students counseled	2.17	2.17	.0
50. major portion of my time deals with scheduling and administrative assignments	2.83	3.67	+ .84*

[a] Consult Appendix E for complete questions

*Areas of greatest change

APPENDIX F

Career Guidance Delivery Model [1]

	PREFERRED MODES OF DELIVERY				
COMPONENTS	One to One	Computer	Curriculum	Group Guidance	Printed Self-Help
Readiness	B,C,		B,E*,F	A,C*,D	C
Self-Information	A,B *	A,B,C*,D,E,F	*	*	D *
Linkage (self-info. to occupations)		A,B,C*,D,E,F			B,C*,D
Occupational Info.		A,B,C*,D,E,F			A,B,C*,D,E,F
Narrowing and Reality Testing	A,B,C,D*,E		E.F*	*	
Implementation Plans	C	A,B,C*,D,E,F		E	D,E*,F

* = Most Effective Combinations

A,B,C,D,E,F = Participating High Schools

[1] Model developed by Dr. Joanne Harris-Bowlsbey

APPENDIX G

CAREER GUIDANCE PROGRAM
OBSERVATION FORM

SCHOOL ______________________ COUNSELOR ______________________

OBSERVER ______________________ DATE ____________ TIME: _____ to _____

SOURCE OF DOCUMENTATION

Student Interview - SI
Counselor Interview - CI
Observation - O

SI CI O

I COUNSELOR ACTIVITIES

A. GROUP COUNSELING/GUIDANCE

___ ___ ___

5	4	3	2	1
Many different group sessions are evident.		Some evidence of group sessions.		Little or no evidence of group sessions.

B. INDIVIDUAL COUNSELING/GUIDANCE

___ ___ ___

5	4	3	2	1
Extensive self-exploration program, facilitated by individual counseling.		Some use of individual counseling.		Little or no use of individual counseli for self-exploratio or any other purpose.

C. TEACHING JOB SEEKING SKILLS

___ ___ ___

5	4	3	2	1
Much effort devoted to interviewing and job search SKILLS training.		Some assistance offered with job seeking SKILLS.		Little or no job seeking SKILLS training.

D. ORGANIZING/SELECTING CAREER INFORMATION

___ ___ ___

5	4	3	2	1
Considerable organization evident which promotes easily retrievable most current information.		Some organization is in evidence, effort being made but task is overwhelming.		Little or no organizational activity. Assumes that all resources present are equally useful.

E. COUNSELOR UPDATING ON CAREER INFORMATION

___ ___ ___

5	4	3	2	1
Considerable effort expended on keeping current with career information and resources.		Some effort at counselor updating of career information and resources. Not a high priority item.		Little effort expended on updating counselor's knowledg of career informatio and resources.

BEST COPY AVAILABLE

I CI O

___ ___ ___

F. COLLABORATING WITH OTHER COUNSELORS

5	4	3	2	1
Extensive collaboration with other counselor's on various projects. Clear evidence of combined efforts.		Some collaboration occurring. Not necessarily a standard mode of operation		Most counselors work on their own as separate autonymous units.

___ ___ ___

G. COLLABORATING WITH FACULTY

5	4	3	2	1
Considerable work with faculty to enhance career development in the classroom. Evidence of combined counselor/faculty activity.		Some collaborating with faculty. Occurs solely as a counselor activity.		Little or no formal contact with faculty.

___ ___ ___

H. COLLABORATING WITH ADMINISTRATORS

5	4	3	2	1
Considerable work with administrators. Regular attempts to make them aware of effectiveness of career guidance activities.		Some work with administrators. Some attempt to make them aware of program effectiveness.		Little or no contact with administrators to make them aware of effectiveness of career guidance activities.

___ ___ ___

I. PERFORMING EVALUATIONS/ACCOUNTABILITY STUDIES

5	4	3	2	1
Great effort expended to account for effectiveness in delivery of career guidance through a systemized data collection process.		Some attention paid to effectiveness of career guidance delivery through some sort of data collection process.		Little or no attention paid to effectiveness of career guidance delivery or data collection.

___ ___ ___

J. PLANNING/SETTING-UP OUTREACH ACTIVITIES

5	4	3	2	1
Great deal of effort expended on utilizing community resources through career days, parent nights, information dissemination, etc.		Some utilization of community resources. Some information about services being disseminated. Some effort at initiating community contacts.		Little or no such activity.

SI CI O

II. STUDENT ACTIVITIES

K. USE OF MULTI-MEDIA PRESENTATIONS

	5	4	3	2	1
___ ___ ___	Many varied presentations of career information cassettes, filmstrips, films evident and in use by students.		Some media sources of career information present. Usage varies.		Little or no use of multi-media presentations to deliver career information.

L. SELF-HELP SERVICES

	5	4	3	2	1
___ ___ ___	Individual career exploration promoted solely by resources. Minimal counselor intervention required.		Some self-exploration of career resources encouraged. Students must rely on counselors for assistance.		Very little individual exploration. Most services available require extensive counselor assistance.

III. USE OF SPECIFIC COMMUNITY RESOURCES

M. LIAISON WITH HIGHER EDUCATION AGENCIES

	5	4	3	2	1
___ ___ ___	On campus recruiters, college days, etc. many means for local colleges and universities to meet students.		Some liaison with recruiters and college personnel workers, not much set-up to involve students participation.		Little or no contact with colleges and universities. Students select an institution of higher learning on their own.

N. LIAISON WITH LOCAL EMPLOYERS

	5	4	3	2	1
___ ___ ___	Frequent employer contacts are used as an integral part of the career guidance program.		Limited employer contacts such as guest speakers, etc., are used.		Little or no contact with local employers, students are left on their own to explore local job opportunities.

O. EXPERIENTIAL LEARNING

	5	4	3	2	1
___ ___ ___	Wide range of activities such as shadowing, co-op, internships, field trips, are evident and in use.		Some experiential learning taking place - not too much to choose from. Not widely used to explore careers.		Very little experiential learning. Students seldom leave the school.

IV. PLACEMENT AND FOLLOW-UP

I CI O

P. PLACEMENT SERVICES

I	CI	O	5	4	3	2	1
___	___	___	Many varied services exist for students such as: job vacancy lists, credential preparation, letters of reference, employer contacts, etc.		Some placement services offered. Little variety or scope to services.		Placement services poor or non-existent. Not viewed as part of counselor function.

Q. GATHERING FOLLOW-UP DATA

I	CI	O	5	4	3	2	1
___	___	___	Considerable effort expended on follow-up. Graduates and drop-outs followed. Extensive data gathering.		Some follow-up done. Incomplete or varied in nature. Typically only college placement data gathered.		Little or no follow-up done. Not typically seen as part of counselor function.

V. PHYSICAL PLANT

R. PHYSICAL PLANT USAGE

I	CI	O	5	4	3	2	1
___	___	___	Inviting, well located area, ample student facilities, assistance readily available.		Facility moderately used, some problems evident (location, lighting, space) which discourages student use.		Poorly lit and located facility, little room for student exploration, uninviting, infrequently used.

VI. RESOURCES AND EQUIPMENT

YES	NO	S. PRINTED MATERIALS	CURRENT	DATED
___	___	DOT	___	___
___	___	Occupational Outlook Handbook	___	___
___	___	Occupational Library (Chronicle/SRA etc.)	___	___
___	___	College Catalogues	___	___
___	___	Give Away Career Information	___	___
___	___	Armed Forces Information	___	___
___	___	Career Games	___	___
___	___	SELF-HELP Career Books	___	___
___	___	LABOR Department Statistics	___	___
___	___	Guides for Organized Career Gathering	___	___
___	___	Special Information Re: Women, Minorities	___	___
___	___	Placement Reports	___	___
___	___	Self-Orientation Materials	___	___
___	___	Home Made Self-Help Materials	___	___
___	___	Vacancy Postings	___	___
		T. MULTIMEDIA RESOURCES		
___	___	Filmstrips	___	___
___	___	Films	___	___
___	___	Slides	___	___
___	___	Cassettes	___	___
___	___	Video Tapes	___	___
___	___	Bulletin Boards	___	___
___	___	Video Discs	___	___

VII. OPERATIONAL COMPUTERIZED GUIDANCE SYSTEMS

___	___	GIS	___	___
___	___	CHOICES	___	___
___	___	SIGI	___	___
___	___	DISCOVER	___	___
___	___	OTHER ____________________	___	___

VIII. STANDARDIZED INVENTORIES/TESTS ADMINISTERED

YES	NO	
___	___	SDS
___	___	KUDER (form _____)
___	___	OVIS
___	___	ASVAB
___	___	STRONG-CAMPBELL

YES	NO	
___	___	HARRINGTON O'SHEA
___	___	QUICK JOB HUNTING MAP
___	___	GATB
___	___	UNIACT
___	___	DAT
		GAT

IX. FACILITIES

YES	NO	
___	___	Movable desks, tables, carrels
___	___	Bookshelves, display cases
___	___	Appropriate lighting
___	___	Centrally located
___	___	Ample space (number of students that can be accommodated
___	___	Receptionist, student aides, to assist with locating information
___	___	Separate areas for individual counseling
___	___	Separate areas for group counseling
___	___	Separate career resource area

X. COUNSELOR INTERVIEW

1. If you were given $1,000.00 in your career guidance budget to spend with no restrictions, how would you choose to spend it? Please be specific. What area of your career guidance service would be first to receive assistance?

   (see following pages)

2. What do you consider to be the strongest and weakest points of your current career guidance service?

   (see following pages)

3. If you could hire another staff person who could free-up 10 hours of your time per week, currently spent on other activities, what specific career guidance activities would you perform in the additional time?

   (see following pages)

X. COUNSELOR INTERVIEW

1. Pre-Study
   - a. personnel - (3)
   - b. standardized tests & inventories - (1)
   - c. transportation to actual job sites - (1)
   - d. no response - (1)

   Mid-Study
   - a. personnel - (3)
   - b. video-disc enhancement for DISCOVER II - (1)
   - c. standardized tests & inventories - (1)
   - d. transportation to actual job sites - (1)
   - e. keep the GIS system - (1)

   Post-Study
   - a. personnel - (3)
   - b. other administrative software - (2)
   - c. transportation to actual job sites - (1)
   - d. more PR work, displays, etc. - (1)

2. Pre-Study (strong)
   - a. relations with other staff - (2)
   - b. off campus contacts with work - (3)
   - c. college information - (3)
   - d. individual attention - (2)

   (weak)
   - a. curriculum infusion - (1)
   - b. time & personnel constraints - (3)
   - c. lack of standardized testing - (1)
   - d. lack of structure, K-12 - (1)
   - e. placement - (1)

   Mid-Study (strong)
   - a. relations with other staff - (1)
   - b. off campus contacts with work - (1)
   - c. college information - (3)
   - d. career information - (2)
   - e. individual attention - (1)

   (weak)
   - a. time & personnel constraints - (2)
   - b. lack of work with Jr. High - (1)
   - c. lack of supplemental info. - (1)
   - d. lack of structured career sessions - (1)
   - e. placement - (1)

   Post- Study (strong)
   - a. administrative backing - (1)
   - b. DISCOVER II
   - c. shadowing jobs - (1)
   - d. college placement - (2)
   - e. individual attention - (1)

   (weak)
   - a. off campus contacts with work - (1)
   - b. no evaluation, follow-up - (2)
   - c. lack of scheduled career guidance sessions - (1)
   - d. time and personnel - (1)
   - e. lack of structure, K-12 - (1)

3. Pre-Study
    a. work with faculty - (1)
    b. outreach work - (2)
    c. more individualized counseling - (3)
    d. work with 9th graders - (2)
    e. group counseling - (1)
    f. paperwork - (1)
    g. more students out to the workplace - (1)
    h. curriculum infusion - (1)

Mid-Study
    a. group work - (3)
    b. curriculum infusion - (2)
    c. work with faculty - (1)
    d. more individualized counseling - (2)
    e. work with 9th graders - (1)
    f. placement work - (1)
    g. field trips to job sites - (1)

Post-Study
    a. curriculum infusion - (2)
    b. work with faculty - (1)
    c. guest speakers - (2)
    d. shadowing workers - (1)
    e. group counseling - (1)
    f. additional counselor training - (1)
    g. individual time with students - (1)
    h. get students off campus - (2)

Table G-1

On-Site Observations of Career Guidance Programs

N=6

OBSERVATION SECTION/ITEM	Point of Observation ($\overline{x}$) PRE-STUDY	MID-STUDY	POST-STUDY	OVERALL CHANGE (±)
I. Counselor Activities				
A. Group Counseling/Guidance	2.16	2.50	2.33	+ .17
B. Individual Counseling/Guidance	3.50	3.83	3.83	+ .33
C. Teaching Job Seeking Skills	1.83	1.68	2.17	+ .34
D. Organizing/Selecting Career Information	3.00	2.50	3.00	.0 *
E. Counselor Updating on Career Information	2.67	3.17	3.33	+ .66
F. Collaborating with other Counselors	2.75	2.60	3.00	+ .25*
G. Collaborating with Faculty	3.17	2.33	3.50	+ .33*
H. Collaborating with Adm.	3.33	3.00	3.33	.0 *
I. Performing Evaluation and Accountability Studies	1.50	1.83	2.50	+1.00
J. Planning Outreach Activities	2.83	2.33	2.50	- .33
II. Student Activities				
K. Multi-Media Presentations	2.16	3.00	2.50	+ .34*
L. Self-Help Services	2.50	3.17	2.16	- .34*
III. Use of Community Resources				
M. Liaison with Higher Education Agencies	4.50	3.50	4.33	- .17*
N. Liaison with Local Employers	2.67	2.16	2.00	- .67
O. Experiential Learning	3.33	3.17	3.00	- .33
IV. Placement and Follow-Up				
P. Placement Services	1.50	1.50	1.67	+ .17
Q. Gathering Follow-Up Data	2.00	1.83	1.50	- .50*
V. Physical Plant				
R. Physical Plant Usage	3.00	3.17	3.17	+ .17

*Items not demonstrating consistant change in one direction over time

Table G-1 (cont.)

On-Site Observations of
Career Guidance Programs
N=6

OBSERVATION SECTION/ITEM	Point of Observation ($\bar{x}$) PRE-STUDY	 MID-STUDY	 POST-STUDY	OVERALL CHANGE (±)
VI. Resources and Equipment #				
S. Printed				
D.O.T.	1.83	2.00	2.00	+ .17
Occupational Outlook Handbook	2.00	2.00	2.00	.0
Occupational Library (SRA, etc.)	2.00	2.00	2.00	.0
College Catalogues	2.00	2.00	2.00	.0
Give Away Career Information	1.83	2.00	1.83	.0 *
Armed Forces Information	1.83	2.00	2.00	+ .17
Career Games	1.16	1.16	1.33	+ .17
Self-Help Career Books	1.67	1.83	1.83	+ .16
Labor Department Statistics	1.50	1.40	1.16	- .34
Organized Career Gathering Guides	1.50	1.16	1.50	.0 *
Special Information (Re: Women and Minorities)	1.83	1.80	1.67	- .16
Placement Reports	1.50	1.00	1.00	- .50
Self-Orientation Materials	1.67	1.67	1.50	- .17
Home Made Self-Help Materials	1.83	1.33	1.16	- .67
Vacancy Postings	1.50	1.50	1.00	- .50
T. Multimedia Resources				
Filmstrips	1.83	1.83	1.83	.0
Films	1.16	1.00	1.00	- .16
Slides	1.00	1.00	1.00	.0
Cassettes	1.83	1.83	1.66	- .17
Video Tapes	1.16	1.00	1.00	- .16
Bulletin Boards	1.50	1.50	1.66	+ .16
Video Discs	1.00	1.00	1.00	.0
VII. Operational Computerized Guidance Programs #				
G.I.S.	1.30	1.30	1.00	- .30
Choices	1.00	1.00	1.00	.0
SIGI	1.00	1.00	1.00	.0
DISCOVER	1.00	2.00	2.00	+1.00
Other	1.16	1.00	1.00	- .16

*Items not demonstrating consistent change in one direction over time

#Yes/No items with values assigned (Yes = 2, No = 1)

Table G-1 (cont.)

On-Site Observations of Career Guidance Programs
N=6

OBSERVATION SECTION/ITEM	Point of Observation ($\bar{x}$) PRE-STUDY	MID-STUDY	POST-STUDY	OVERALL CHANGE (±)
VIII. Standardized Inventories/Tests Administered #				
SDS	1.00	1.16	1.33	+ .33
KUDER	1.50	1.50	1.50	.0
OVIS	1.16	1.16	1.16	.0
ASVAB	1.16	1.50	1.33	+ .17*
Strong-Campbell	1.00	1.00	1.00	.0
Harrington O'Shea	1.00	1.00	1.16	+ .16
Quick Job Hunting Map (Bowles)	1.00	1.00	1.16	+ .16
GATB	1.00	1.00	1.33	+ .33
UNIACT	1.00	2.00	2.00	+1.00
DAT	1.33	1.67	1.33	.0*
GAT	1.00	1.00	1.00	.0
IX. Facitities#				
Movable Desks, Tables, Carrels	1.50	1.50	1.33	- .17
Bookshelves, Display Cases	1.83	1.33	1.83	.0*
Appropriate Lighting	1.83	2.00	1.83	.0*
Centrally Located	2.00	1.83	1.83	- .17
Ample Space	1.50	1.50	1.50	.0
Receptionist/Aides to Assist Students Locate Materials	1.83	1.83	1.83	.0
Separate Individual Counseling Areas	2.00	1.83	1.83	- .17
Separate Group Counseling Areas	1.30	1.16	1.33	+ .03*
Separate Career Resource Area	1.83	1.66	1.66	- .17

*Items not demonstrating consistent change in one direction ov[illegible] time

#Yes/No items with values assigned (Yes = 2, No = 1)

APPENDIX H

Career Development Inventory
Subscales and their Meaning

Donald E. Super, 1981

Career Planning Scale	- (CP)	20 items in which student reports the career planning in which he/she is engaged. Scale assesses attitudes and reported planfulness.
Career Exploration Scale	- (CE)	20 item self-report, student rates various sources of career information (ie. parents/friends/printed material/media etc.) and later rates their usefulness and the usefullness of the information obtained thereby.
Decision Making Scale	- (DM)	20 sketches of persons making career decisions - student is asked to solve suggested career "problem" (ie. those who can better solve a stated problem can better solve the problems they will face). Scale assesses ability to apply principles of Career Decision Making.
World of Work Scale	- (WW)	20 questions, 10 on career development tasks within the Exploratory and early Establishment stages (Super 1957, Super & Bohn 1970). Other 10 test knowledge of occupational structure of sampled occupations. Scale assesses awareness and occupational knowledge that contribute to successful career planning.
Knowledge of Preferred Occupation Scale	- (PO)	40 multiple choice questions pertaining to all occupations. Student chooses a specific career area, then answers questions (general) about that specific occupation. Correct answers compiled from DOT, OOH, or panel of 20 "expert" vocational psychologists if no objective data exists. Scale measures amount of in depth exploration on part of student in stated vocational choice area. Job characteristics, hours of work, employment prospects, amount of education required, etc. are examined.
Career Development Attitude	- (CDA)	Combination of CP and CE scales which are highly correlated for overall attitudinal scales. Has increased reliability as a measure of attitude.
Career Development Knowledge	- (CDK)	Combination of DM and WW scales. Combination makes a concise cognitive scale with increased reliability.
Career Orientation Total	- (COT)	Combination of CP, CE, DM and WW scales. Approaches an overall measure of Career Maturity, measuring four of Super's five basic dimensions of adolescent vocational maturity (1974). Best viewed as a composite measure of four important aspects of career maturity.

School Form

APPENDIX I

Developed by Drs. Donald E. Super, Albert S. Thompson,
Richard H. Lindeman, Jean P. Jordaan, and Roger A. Myers
at Teachers College, Columbia University

Career Development Inventory

DIRECTIONS

The Career Development Inventory asks you about school, work, your future career, and some of the plans you may have made. Answers to questions like these can indicate what kind of help may be useful to you in planning and preparing for a job after graduation, for vocational and technical school training, or for going to college before pursuing your occupational career.

The Inventory consists of two parts. The person who administers it will indicate whether you should complete the first part, the second part, or both parts. Part I (Career Orientation) begins on the next page and Part II (Knowledge of Preferred Occupation) begins on Page 11.

All your answers to the CDI go on a special answer sheet which should accompany this booklet. Make no marks of any kind on this booklet. Record your answers by blackening the appropriate lettered boxes on the answer sheet, using a #2 lead pencil. **Do not use a pen.** If you change an answer, please erase thoroughly.

Before opening the test booklet, fill in your name and the other information requested on the upper third of the answer sheet, following any special instructions of the person administering the inventory. Fill in the name boxes carefully.

When directed to do so, open this booklet and begin. Please answer every question. If you are not sure about an answer, guess; the first answer that comes to you is often the best one. Work rapidly, but be careful to make your marks in the right boxes for each question.

Consulting Psychologists Press, Inc., Palo Alto, California

©Copyright, 1979, by Consulting Psychologists Press, Inc., 577 College Ave., Palo Alto, CA 94306. All rights reserved. No portion of this material may be reproduced without written permission of the Publisher.

NOTE: The following pages (A-46 to A-59) have been removed due to the publishers copyright restrictions. Copies of the document can be obtained from the publisher listed above.

Table I-1

Comparison of High School Treatment Groups to Posttest Score
(Career Development Inventory)

Treatment Group[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value
Directive	118.06		117.88		115.86		114.46		109.38		121.10		116.71		123.23	
Non-Directive	115.53	7.58**	115.07	6.71**	115.91		110.32	3.02*	108.57		120.39	7.04**	115.01		121.91	5.39**
No Treatment Control	109.89		110.88		113.86		111.64		109.03		111.69		115.12		115.63	

[a] N = 126 (Directive), 120 (Non-Directive), 140 (Control)

[b] Adjusted for pretest score.

* $p < .05$

** $p < .01$

Table 1-2

Comparison of High School Treatment Groups by Sex Difference (Career Development Inventory)

Sex of Subject[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value
Male	114.93		113.47		112.58	6.49*	109.48	8.95**	110.40		117.99		113.07	5.32*	118.08	
Female	113.89		115.13		116.86		113.92		108.54		117.12		116.48		121.38	

[a] N = 154 Males, 232 Females

[b] Adjusted for pretest score.

* $p < .05$

** $p < .01$

Table I-3

Comparison of High School Treatment Groups by Program of Study to Posttest Scores (Career Development Inventory)

Program of Study[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision Making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value
Academic	115.65	2.98*	117.86	7.15**	117.39	6.49*	113.17	8.95**	110.87	3.22*	123.52	14.27**	120.04	22.06**	127.01	24.85**
Vo-tech	116.64		108.41		112.39		111.10		107.43		111.53		103.93		109.11	
Business/ Commercial	109.57		109.64		111.13		107.55		103.91		108.36		111.93		112.31	
Other	109.47		110.32		113.44		113.19		109.27		104.32		111.45		109.55	

[a] $\underline{N}$ = Academic (225), Vo-tech (72), Business/Commercial (58), Other (31)

[b] Adjusted for pretest score.

* $\underline{p} < .05$

** $\underline{p} < .01$

Table I-4

Comparison of Total High School Study Groups t Values to Posttest Scores (Career Development Inventory)

Study Group Pairs[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision Making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value
Control	110.36	-2.49**	109.66	-3.96**	113.58		111.54	-1.74*	108.30	-1.39[b]	111.69	-3.87**	113.79	-1.48[b]	115.63	-3.48*
Directive	116.67		118.98		116.09		114.52		110.95		121.10		116.71		123.23	
Directive	116.67		118.98	1.56[b]	116.09		114.52	2.05*	110.95		121.10		116.71		123.23	
Non-Directive	116.43		115.35		115.98		110.38		108.68		120.39		115.01		121.91	
Control	110.36	-2.46**	109.66	-2.42**	113.58		111.54		108.30		111.69	-2.81**	113.79		115.63	-2.32*
Non-Directive	116.43		115.35		115.98		110.38		108.68		120.39		115.01		121.91	

[a] N = Directive (126), Non-Directive (120), Control (140)

[b] $p < .10$ (indicates possible trend)

* $p < .05$

** $p < .01$

BEST COPY AVAILABLE

APPENDIX J

DISCOVER II On-Line User Evaluation*
(High School Study)

	SCHOOLS ($\bar{x}$)						($\bar{x}$ of $\bar{x}$)
	A	B	C	D	E	F	
A. How helpful was today's use of DISCOVER?							
1. very helpful	32.2	54.5	37.5	18.2	48.4	42.4	38.9
2. quite helpful	40.7	36.4	37.5	54.5	26.6	39.4	39.2
3. moderately helpful	15.3	7.6	17.5	18.2	14.1	12.1	14.1
4. somewhat helpful	10.2	.0	7.5	9.1	7.8	4.5	6.5
5. not at all helpful	1.7	1.5	.0	.0	3.1	1.5	1.3
B. How enjoyable was your use of DISCOVER?							
1. very enjoyable	55.9	48.5	37.5	9.1	42.2	42.4	39.3
2. quite enjoyable	18.6	39.4	42.5	68.2	40.6	43.9	42.2
3. moderately enjoyable	20.3	10.6	12.5	18.2	7.8	10.6	13.3
4. somewhat enjoyable	3.4	.0	.0	4.5	4.7	3.0	2.6
5. not at all enjoyable	1.7	1.5	5.0	.0	1.6	.0	1.6
C. What was the best thing about your use of DISCOVER?							
1. Good information about occupations or schools	39.0	57.6	45.0	.0	56.3	51.5	41.6
2. Good ways of identifying occupations on schools	16.9	18.2	20.0	13.6	26.6	27.3	20.4
3. Information about myself (values, interests, abilities)	32.2	22.7	20.0	81.9	12.5	16.7	31.0
4. Fun using the computer	10.2	1.5	7.5	4.5	3.1	4.5	5.2
5. Other	.0	.0	7.5	.0	3.1	.0	1.8
D. Did you have any of the following problems?							
1. Trouble with the computer	8.5	3.0	10.0	.0	7.8	1.5	5.1
2. Unclear directions about how to use the computer	1.7	3.0	.0	9.1	1.6	1.5	2.8
3. Unclear directions about how to use DISCOVER	3.4	1.5	7.5	.0	1.6	3.0	2.8
4. Boredom	3.4	4.5	5.0	9.1	14.1	7.6	7.3
5. None of the above	81.4	87.9	77.5	86.4	70.3	86.4	81.7
E. Where are you now in your career planning?							
1. I have selected an occupation	23.7	13.6	17.5	4.5	25.0	30.3	19.1
2. I am seriously considering several occupations	22.0	50.0	35.0	9.1	35.9	33.3	30.9
3. I have narrowed choice to a broad group of occupations	30.5	13.6	27.5	68.2	17.2	22.7	30.0
4. I have some vague idea	15.3	19.7	17.5	13.6	9.4	10.6	14.4
5. I am "nowhere" as of now	6.8	3.0	.0	9.5	7.8	3.0	4.2

APPENDIX J (cont.)

DISCOVER II On-Line User Evaluation*
(High School Study)

	SCHOOLS (x)						($\bar{x}$ of $\bar{x}$)
	A	B	C	D	E	F	
F. What are the chances of your coming back again to use DISCOVER?							
1. Excellent	66.1	57.6	70.0	90.9	45.3	47.0	62.8
2. Above Average	23.7	31.8	17.5	.0	21.9	30.0	20.9
3. Fair	5.1	9.1	10.0	4.5	18.8	21.2	11.5
4. Poor	3.4	1.5	.0	.0	4.7	3.0	2.1
5. Very poor	.0	1.5	.0	4.5	4.7	.0	1.8
G. Which of the following have you done since you last used DISCOVER?							
1. Read printed material about occupations or further ed.	13.6	15.2	30.0	4.5	37.5	21.2	20.3
2. Talked to a counselor.	11.9	18.2	22.5	36.7	20.3	16.7	21.1
3. Talked with a parent or another adult important to you.	23.7	19.7	30.0	18.2	32.8	21.2	24.3
4. Talked to someone who works in the occupation or knows about the school(s).	8.5	10.6	10.0	4.5	12.5	18.2	10.7
5. Written for more information.	6.8	9.1	2.5	9.1	7.8	9.1	7.4
6. None of the above.	44.1	54.5	30.0	27.3	21.9	25.8	33.9

---

*The percentages shown may not add up to 100% due to rounding.

APPENDIX K

I.D.# ____________

MILLERSVILLE UNIVERSITY
CAREER DEVELOPMENT SURVEY OF ACTIVITIES

NAME ______________________ SCHOOL ____________________ DATE

DIRECTIONS: Answer the following questions based upon your participation in the activity identified during the time period indicated. Most questions will require only one response. However, a few questions ask for more than one response (this will be indicated in the question). In several cases your response to a question will depend on how you answered the previous question. Use an (x) to indicate your response(s). If you respond to "other" as an answer, please specify in writing your response on the adjacent line.

1. Rank only the following activities in which you participated over this past summer by order of importance in which the activity helped you in the process of career decisionmaking. (MARK ACTIVITY FIRST, THEN INDICATE ORDER OF IMPORTANCE)

   a.____ work at a job for which I was paid

   b.____ volunteer work (non-paid)

   c.____ education, study

   d.____ travel

   e.____ recreation, leisure time, hobbies, etc.

   f.____ I did not participate in any of the above activities

   g.____ other (specify) ______________________________

2. Of the above activities you marked in question one, what impact have they had on your ability to further clarify a career choice? (SELECT ONLY ONE RESPONSE)

   a.____ increased my ability

   b.____ remained the same

   c.____ no noticeable impact

   d.____ not applicable (no participation in these activities)

3. If you chose item "a" in question two, please indicate which activity (by letter) was most influential career-wise. (SKIP THIS QUESTION ONLY IF YOU MARKED "b, c, or d" TO QUESTION TWO)

   ______ (letter of most influential activity in question #1)

4. How would you classify yourself right now in regards to knowing what kind of occupation you want to enter after your education is completed?

   a.____ I have made a specific occupational decision

   b.____ I have given it a great deal of thought and narrowed my decision to a few tentative occupations

   c.____ I have given it occasional thought but have some idea of what occupational direction to follow

   d.____ I have given it little or no thought and have only a vague idea of what occupational area to follow

   e.____ I am completely at a loss to identify which occupational direction to follow

5. Based upon your answer to question four, have you developed a plan to reach your occupational goal?

a.____ yes

b.____ no

c.____ not applicable

6. During the spring semester of your junior year what type(s) of career assistance did you receive most frequently from the guidance office? (MORE THAN ONE CHOICE ALLOWED)

a.____ individual help with career decisionmaking

b.____ group help with career decisionmaking

c.____ computerized career guidance using DISCOVER

d.____ no specific help in this area

7. Based upon your response to question six, which type of career assistance was most helpful? (INDICATE BY USING ONE LETTER)

_____ (letter of most helpful type of career assistance)

8. The most helpful type of career assistance I indicated in question seven has: (MORE THAN ONE RESPONSE CAN BE SELECTED)

a.____ expanded my knowledge of occupations

b.____ expanded my knowledge of career options open to me

c.____ provided me with a better understanding of myself

d.____ helped me select a college to attend

e.____ helped me select a college major

f.____ identified for me the required occupational preparation

g.____ clarified those occupations unfamiliar to me

h.____ other (specify)____

9. During the spring smemster of your junior year did you use any career resource materials located in your guidance or career center?

a.____ yes

b.____ no

10. Based on your answer to question nine, indicate what type(s) of resources you used most frequently in descending order of use.(FIRST MARK THOSE ITEMS WHICH YOU USED AND THEN THE ORDER OF FREQUENCY NEXT TO THE "x")

a.____ DISCOVER computerized career guidance system

b.____ printed materials dealing with careers & career assistance

c.____ college catalogues

d.____ multi-media (films, slides, filmstrips, cassettes, etc.)

e.____ I did not use any of the above resources

f.____ other (specify)

NOTE: The remainder of the questions are to be answered only if you used the DISCOVER computerized career guidance system during this past spring semester. Those students not using DISCOVER prior to now, return this survey now to the survey administrator. Make sure you have filled in the requested identification information on page one.

11. Has using DISCOVER helped you?

a.____ yes

b.____ no

12. If you indicated "a" in question 11, indicate how it has helped (MORE THAN ONE RESPONSE CAN BE SELECTED)

a.____ expanded my knowledge of the world of work

b.____ increased my knowledge of those career options open to me

c.____ helped me to select a college to attend

d.____ helped me to select a college major

e.____ helped me to better understand myself

f.____ identified the preparation required for occupational entry

g.____ clarified occupations that were previously unfamiliar to me

h.____ other (specify) ____

13. How useful do you feel the information gained from using DISCOVER has been for you?

a.____ more complete that other career resources at my school which I have used

b.____ similar to other career resources at my school which I have used

c.____ not as complete as other career resources at my school which I have used

d.____ other (specify) ____

14. In what way do you prefer receiving career assistance?

a.____ talking exclusively with a counselor

b.____ using the computer (DISCOVER) exclusively

c.____ using the computer (DISCOVER) first and then seeing a counselor later

d.____ seeing a counselor first and then following this up by using the computer (DISCOVER)

e.____ other (specify) ____

Table K-1

Career Development Survey of Activities

QUESTION #1

ACTIVITY*	STUDY GROUP	Order of Importance ($\bar{x}$ of $\bar{x}$) 1	2	3	4	5	6	7
a. Paid Job	D	45.65	17.39	10.48	3.47	.72	.0	.0
	N	46.02	20.27	4.95	2.14	.69	.0	.0
	C	53.86	12.80	9.11	1.81	.0	.0	.0
b. Volunteer Work	D	6.97	4.77	6.22	2.83	.66	.72	.0
	N	5.74	7.56	8.65	.72	1.45	.0	.0
	C	7.21	6.05	1.83	2.97	1.21	.0	.0
c. Education, Study	D	8.39	7.03	4.19	2.75	1.39	.66	.0
	N	6.40	5.05	5.05	3.63	.72	.0	.0
	C	3.59	4.23	3.62	1.19	.0	.0	.0
d. Travel	D	10.39	27.80	19.36	6.28	.69	.0	.0
	N	14.46	18.68	12.34	13.27	.69	.0	.0
	C	4.87	14.45	22.13	3.02	1.15	.0	.0
e. Recreation, Leisure, Hobbies	D	18.73	33.14	21.57	6.25	.66	.0	.0
	N	17.70	37.05	21.25	4.19	.0	.0	.0
	C	19.53	46.54	13.22	2.54	.61	.0	.0
f. No Participation	D	.72	.0	.0	.0	.66	.0	.0
	N	.72	.0	.0	.0	.0	.0	.0
	C	.57	.0	.0	.0	.0	.0	.0
g. Other	D	10.47	1.42	2.86	.0	1.45	.0	.0
	N	8.31	.0	.69	.0	.0	.0	.0
	C	10.33	4.52	.59	.0	.0	.0	.0

D = Directive
N = Non-Directive
C = Control

*More than one response per question

Table K-1 (cont.)

Career Development Survey of Activities

QUESTIONS 2-9 ($\bar{x}$ of $\bar{x}$)

	STUDY GROUP		
QUESTION/ITEM	Directive	Non-Directive	Control
2a.	50.78	48.78	44.14
b.	30.43	34.12	30.81
c.	15.98	11.59	19.93
d.	2.81	5.51	5.12
3a.	25.63	30.08	23.53
b.	5.59	4.95	4.81
c.	5.59	5.02	2.94
d.	2.84	5.74	3.09
e.	7.67	4.23	6.09
f.	1.39	3.34	.0
g.	1.42	3.53	2.38
NR	.0	.0	16.67
4a.	38.07	39.69	22.98
b.	38.25	36.04	57.51
c.	14.68	16.51	17.77
d.	6.98	7.07	1.75
e.	1.42	.70	.0
NR	.70	2.38	.0
5a.	76.38	75.33	69.41
b.	19.40	18.86	28.76
c.	4.23	5.82	1.83
6a.*	49.27	47.07	43.95
b.	8.37	9.77	10.15
c.	91.60	89.24	.0
d.	2.81	4.46	49.41
7a.	27.07	20.70	46.62
b.	3.54	2.81	6.58
c.	64.50	69.30	.0
d.	.73	2.15	12.45
NR	2.03	3.53	34.90
8a.*	55.07	57.82	23.88
b.	67.97	66.03	31.87
c.	34.13	24.09	11.10
d.	25.62	21.82	26.91
e.	25.08	18.48	10.95
f.	53.21	44.78	19.44
g.	31.44	39.32	16.24
h.	2.78	1.42	10.77
NR	.73	2.21	24.31
9a.	85.35	84.55	53.39
b.	14.65	15.45	46.60

*More than one response per question

Table K-1 (cont.)

Career Development Survey of Activities

QUESTION #10

RESOURCE*	STUDY GROUP	Freq. Order of Use ($\bar{x}$ of $\bar{x}$) 1	2	3	4
a. DISCOVER II	D	61.60	20.93	2.78	.0
	N	60.16	20.76	9.10	.0
	C	.0	.0	.0	.0
b. Printed Materials on Careers	D	9.00	15.14	19.62	1.36
	N	9.07	20.72	9.10	.69
	C	21.27	21.43	1.19	.0
c. College Catalogs	D	18.24	31.32	6.14	.66
	N	24.38	21.50	9.07	.0
	C	31.43	11.67	.61	.0
d. Multi-media	D	.0	.0	2.72	2.77
	N	.69	1.38	.69	2.14
	C	.0	1.81	.64	.64
e. No Use	D	.0	.0	.0	.0
	N	.0	.0	.0	.0
	C	32.66	.0	.0	.0
f. Other	D	2.77	1.42	.0	.0
	N	.0	1.42	.0	.0
	C	6.00	3.97	.0	.0

D = Directive
N = Non-Directive
C = Control

*More than one response per question

Table K-1 (cont.)

Career Development Survey of Activity

QUESTIONS 11-14 ($\bar{x}$ of $\bar{x}$)

	STUDY GROUP		
QUESTION/ITEM	Directive	Non-Directive	Control[a]
11a.	93.72	84.89	
b.	5.62	14.56	
NR.	.67	.0	
12a.*	53.53	41.58	
b.	75.71	58.76	
c.	20.76	19.66	
d.	18.07	14.13	
e.	30.69	29.05	
f.	59.44	44.22	
g.	43.66	42.43	
h.	.0	4.03	
NR.	2.06	13.17	
13a.	60.30	51.35	
b.	31.33	31.19	
c.	4.20	9.64	
d.	2.12	6.44	
NR.	1.36	1.39	
14a.	13.12	11.42	
b.	10.31	9.41	
c.	41.05	39.72	
d.	28.49	29.43	
e.	7.07	9.30	
NR.	.67	.0	

* More than one response per question

[a] No response per survey directions (did not apply to Control group)

B. UNIVERSITY STUDY

HYPOTHESES
(University Study)

1. Given three randomly selected groups of university freshmen, non-declared majors, the first exposed to computerized career guidance and directive counseling, the second exposed to computerized career guidance alone, and the third receiving no treatment, all groups will perform equally well when measured for career maturity.

2. Sex difference will have little or no appreciable effect on overall measure of career maturity of a random sample of university freshmen, non-declared majors.

3. Given three randomly selected groups of university freshmen, non-declared majors (directive counseling, non-directive counseling and control), all groups will demonstrate little or no appreciable difference in degree of involvement in certain career development tasks as a result of study participation.

4. As a result of using a computerized career guidance system alone or in combination with a career development course, university freshmen, non-declared majors will exhibit little or no appreciable difference in the amount of related career development activity generated.

INTRODUCTION
(University Study)

The Career Planning & Placement Center at Millersville University had long considered the addition of a computerized career guidance system as an enhancement to its well-stocked career library and career services. Several surveys and studies at the institution indicated that a large percentage of each year's entering Freshman Class were undecided as to their major or career objective. Previous attempts to institute a permanent career development course for undeclared majors has not met with universal administrative and faculty support. (At the same time, however, there has been the perennial administrative concern over student attrition. Although attempts have been made to increase faculty awareness of importance of academic advisement through a variety of commmunications over a period of time, emphasis has been on advisement beyond just the "basic requirements." While overall results have shown improvement, impact on student retention has been less than favorable.)*

The above need called for a procedure to deliver student advisement which focused on a comprehensive career planning process to supplement faculty efforts. Use of a computer assisted career guidance system was viewed as a means of providing up-to-date career information while permitting students to self-assess their individual interests, abilities and values and apply career decision making procedures in a non-threatening environment. At the same time, such a system could be used to provide maximum career assistance with a minimal level of counselor intervention or delivery of a repetitious nature. While not replacing the counselor's services, the computer assisted guidance system was seen as an effective method of delivering career assistance resulting in increased staff efficiency in dealing with a large student-counselor ratio.

Prior to this study, several nationally used computer assisted career guidance systems were explored in depth through extensive literature surveys, demonstrations and on-site visits to other user locations for hands-on experience. Based upon our preliminary research, the DISCOVER II computer assisted career guidance system was selected for incorporation into the career development services of the Career Planning & Placement Center of Millersville University. The microcomputer version of this system was chosen because of favorable cost, convenience of setup, ease of operation and maximum control. Additional information on DISCOVER II can be found in Appendix A. The DISCOVER II system basically assists the user to:

1. gather and use self-information through assessing interests, rating aptitudes and prioritizing values,
2. search for occupations appropriate to self-information data,
3. explore occupations in detail based upon a comprehensive world-of-work model, and
4. gain detailed educational information on a comprehensive file of 2 year, 4 year and graduate schools.

All of the above material is updated annually, thereby providing users with current, relevant information while assisting the Career Planning & Placement Center to upgrade their career development services using updated resources. The interactive nature of DISCOVER II closely approximates regular client-counselor dialogue.

* Although not part of this study, DISCOVER II's impact on attrition needs to be addressed as cited in the Recommendations at the end of this report.

Population

During May 1983, a meeting with the Millersville University Registrar and Assistant Provost was held by the project director to arrange selection of the study's student population. From over 300 incoming freshmen non-declared majors, a random sample of 138 subjects was selected for the study and assigned to a 10 session, non-credit course called DISC. 001. Subsequently, the 138 subjects were randomly assigned to 10 sections of the course each section initially enrolling 14 students. During the summer orientation session, two separate brief meetings were held with these students and their parents on campus to explain the career guidance assistance to be offered to the incoming freshmen non-declared majors during the Fall 1983 semester. Prior to these sessions each student and their parents were sent separate letters concerning their selection and participation in a career assistance program. (see Appendix B).

The initial population contained 82 male and 56 female students enrolled as non-declared majors. The ten sections of DISC. 001 were divided into the following three groups: (a) control - 3 sections containing 42 subjects, (b) DISCOVER/Directive Counseling - 4 sections containing 56 subjects, and (c) DISCOVER only - 3 sections containing 42 subjects. At the time of the final CDI post-test, total study population shrank to 76 subjects due to the attrition factors described in a later section of this report. Therefore the final population contained 45 male and 42 female freshman students. Study results are based upon this final population size.

Study Design

During the first week of the Fall 1983 semester, students enrolled in ten sections of DISCOVER 001, reported to the first session to receive a briefing of their participation in the program (see Appendix C for timeline). At the second bi-weekly session all students were administered the Career Development Inventory (CDI) as a pre-test of career maturity. Students assigned to the three control group sections were told that they would be assigned to use the DISCOVER program later in the semester due to scheduling a large number of students on the computer. At this point the control group sections were dismissed from attending the bi-weekly classes and told they would be contacted later in the semester to meet again prior to being scheduled on the computer.

Students in the four directive and three non-directive study groups were shown a brief video-tape on how to use the DISCOVER II computer-assisted career guidance program and given additional background information on its content and intended use. After the third class meeting, students in the seven treatment sections above were told to come to the Career Planning & Placement Center and schedule the first of three, one-hour blocks of time on the microcomputers. The directive group was assigned to computer A while the non-directive group were scheduled on computer B in order to keep on-line user response data separate for the two treatment groups during the study. The three sections of the non-directive group were then instructed not to attend the bi-weekly course sessions until further notified in the semester.

The four sections of the directive group continued to attend the remaining 10 bi-weekly sessions of the DISCOVER 001 career guidance course which were designed to cover topics of (1) self-assessment, (2) using career information, (3) selecting a major, and (4) summarizing and analyzing self information for career decision-making. (See Appendix D for course syllabus).

Prior to the end of the 10 session course, the control and non-directive groups were mailed notices to report for the post-test administratin of the CDI (see Appendix E). The directive group was administered the CDI as part of their last regular class meeting. Students who did not appear to take the CDI post-test after a second notice and phone call were dropped from the study. Other attrition factors were: (1) students with fewer than three, one-hour sessions on the computer and (2) absence from more than 50% of the 10 session DISCOVER 001 career course. (Students subsequently identified the quasi-volunteer nature of the cause with no attendance requirement.)

Students in the directive and non-directive groups were also administered the Survey of Career Development as a pre and post-test measurement of career development tasks (see Appendix F).

At the conclusion of each student's time on the computer in the two treatment groups, an exit interview was conducted with each student. As part of this session, career activities and attitudes as a result of using DISCOVER II were measured through the Survey of Career Development Activity (see Appendix G).

Study Group Activities

1. DISCOVER/Directive Counseling Group - treatment consisted of having students schedule a minimum of three, one-hour sessions on the DISCOVER II computerized career guidance system at the Career Planning & Placement Center (CPPC). Directive career guidance was provided through a ten session non-credit career development course which met for a five week period and was conducted by CPPC staff members. Group participants received a pre and post-test administration of the CDI and Survey of Career Development. Career Development Activity was measured through a post-test only survey during an exit interview. On-line user evaluation data of DISCOVER II were collected.

2. DISCOVER User only Group - scheduled a minimum of three, one-hour sessions on DISCOVER II as above. No accompanying directive career guidance course activities were scheduled. This group received the same administrations of those instruments cited above for the Directive Counseling Group

3. Control Group - received a pre and posttest administration of the CDI and Survey of Career Development only. No DISCOVER II usage or career course sessions were scheduled by this group. After posttest administration of the CDI, group participants were shown the videotape on how to use DISCOVER II and given additional information on program content and usage. At this point they were invited to use the system as active participants.

ANALYSIS
(University Study)

A variety of descriptive and evaluative data were gathered regarding this study. The data are divided into two caregories; that which deals with directive career guidance delivered through a career development course (descriptive), and

and that which deals with corresponding effects of treatment or non-treatment upon student career development (evaluative). The following diagram lists the different methods by which data were gathered and treated timewise during the study:

DATA COLLECTION PROCEDURES
(University Study)

COUNSELOR/METHOD OF CAREER GUIDANCE DELIVERY	DATA COLLECTION DESIGN/GROUP	TREATMENT METHOD
Career Course Outline	Outline Distributed (D)	none

STUDENT/CAREER DEVELOPMENT DATA	DATA COLLECTION DESIGN/GROUP	TREATMENT METHOD
Survey of Career Development	Pre & Post Study (D,N,C)	One-way ANOVA
	Post Study (D,N,C)	Two-way ANOVA
Career Development Inventory	Pre & Post Study (D,N,C)	Machine scored One-way ANOVA Two-way ANOVA t-test
User Evaluation Data	Computer on-line (D,N)	$\bar{X}$
Survey of Career Development Activity	Post Study (D,N)	$\bar{X}$

D = Directive Group
N = Non-Directive Group
C = Control Group

Career Course Outline

Topics covered by the directive counseling treatment group are contained in Appendix D. The non-directive group received the first three classes (which amounted to testing and a videotape on use of DISCOVER II) and subsequent use of DISCOVER II. The control group received no treatment.

Survey of Career Development

The Survey of Career Development (originally part of the DISCOVER I on-line program) was administered to all subjects in the university study as a pre and posttest. Students were asked to assess their involvement in certain career development tasks such as self-exploration activities, career decision making, learning about occupations, and making career plans.

A sample of the survey is contained in Appendix F. The researchers tabulated separate sums for each subject's responses on the five part survey. These results were entered by study groups into the Univac 1400 computer and treated with the Statistical Package for the Social Sciences (SPSS) program to determine levels of significance for the data.

A one way analysis of variance was performed on the data to determine if the difference between the scores for the two treatment groups and the control group was significant. Whenever the source of variation for pretest score was found to be ($p<.05$) or of greater significance, posttest scores were covaried for pretest score. The final results are presented in Table F-1 with areas of statistical significance indicated.

Career Development Inventory

All university subjects were administered the college and university form of Super's Career Development Inventory (1982) as a pre and post-test. The basic format of the inventory remained the same as in the high school study although questions and statements were geared for the next highest developmental level (exploration) of Super's Career model. In addition, separate tests of validity and reliability were performed on the college and university version of the CDI with results available from Consulting Psychologists Press, Inc. Raw data for the five subscales and three combined scales were processed by Consulting Psychologists Press, Inc. and the resultant scores were entered into the Univac 1400 computer and then treated with the SPSS Package for the Social Sciences program to determine levels of significance for the data.

Initially a one-way analysis of variance was performed to determine if the difference between the scores for the treatment groups and the control was significant. A two-way analysis of variance was then performed to determine the significance of any interaction effect between scores for treatment groups and the sex of the subjects [a factor found to be significant (Table I-3)]. Whenever the source of variation for prescore was found to be $p<.05$ or of greater significance, the posttest score was covaried for pretest score.

The final results are presented in Table I-1 with areas of statistical significance indicated. A description of each subscale of the CDI is included in Appendix H. For more detailed information on the Career Development Inventory consult the User's Manual and College Form Supplement available from Consulting Psychologists Press, Inc. A sample copy of the instrument is included in Appendix I.

DISCOVER II User On-line Evaluative Data

The DISCOVER II software includes an on-line evaluation of user satisfaction with the system. The microcomputer tabulates the results as students complete their use of DISCOVER II and administrators can access the results via the CP/M operating system. Questions, raw data, and percentages for the two treatment groups are included in Table J-1. A copy of the instrument is found in Appendix J.

Survey of Career Development Activity

A survey was constructed by the researchers to assess subjects attitudes and response to using DISCOVER II while also measuring related behaviors generated as a result of participation in the study. The instrument was modified from one used in a study of DISCOVER I at Penn State University (Garris 1982). As subjects in the two treatment groups finished their use of DISCOVER II, they were scheduled for an exit interview with a member of the Career Planning & Placement Center staff. The instrument was administered at the outset of the interview and reviewed with each interviewee during the course of the session. Mean scores were computed for both treatment groups and can be found in Table G-1. A sample of the instrument is included as Appendix G.

RESULTS
(University Study)

Survey of Career Development

Both treatment groups clearly outscored the control group on the two self-exploration scales ($p<.01$), the Decision-Making Scale ($p<.01$), and the Occupations Scale ($p<.01$). There was no significant difference between and two group scores for the Career Planning Scale. Directive and non-directive groups did not appear to be significantly different on any scale score even though the non-directive group produced slightly higher scores on the first of the self-exploration scales and the Occupations scale (see Table F-1).

Career Development Inventory

A one-way analysis of variance was performed on the pretest data for all scales of the Career Development Inventory (CDI). Due to random assignment of subjects to the three groups, no significant difference was found between groups on any scale.

Analysis of variance was then performed on posttest data for the same three groups. These posttest data results were similar to those of the companion high school study. Significance was found ($p<.05$) on the first two scales of the CDI (Attitudinal-Career Planning, Career Exploration) for overall data. All other scale scores were not significant although the combined Career Development Attitude Scale demonstrated a possible trend ($p<.10$). It was felt by researchers that small sample size contributed to lack of significance on more of the scales and stratification of the scores indicated that given a sample size equal to the companion high school study, results probably would have shown significance in the combined Attitudinal and Career Orientation Total Scales. Posttest data results are found in Table I-1.

Subsequently, a t-test was performed on CDI posttest data for all three study groups to determine whether differences between any two group combinations were significant. The t-test results showed that the directive group's scores were significantly higher than both the non-directive group ($p<.05$) and the control group ($p<.01$) on the two attitudinal scales of Career . lanning and Career Exploration. The combined CDI scale results on the Career Planning and Career Orientation Total Scales again demonstrated the directive group outperformed both the non-directive and control groups ($p<.01$). A summary of t-test results are found in Table I-2.

When subjects were divided according to sex, females scored higher than males on the knowledge-based scales of the CDI, much as they did in the companion high school study (see Table I-3).

Since this sex difference was noted, it was decided to perform a two-way analysis of variance on the data to determine if any significant interaction effects between sex and treatment group existed. In fact a significant interaction effect did occur on the Decision Making Scale of the CDI ($p < .05$) and the significance for the interaction effect on the Career Planning Scale and Career Orientation Total Scale approached significance ($p < .10$). No other scales of the CDI demonstrated a statistical significant interaction effect.

DISCOVER User On-line Evaluation Data

On-line DISCOVER II users evaluation data were collected at the end of 15 weeks for both treatment groups - DISCOVER plus directive counseling (Group A) and DISCOVER use alone (Group B). In both cases reaction to the system was highly positive. More of Group B (73% B, 68% A) rated DISCOVER II as being quite to very helpful while both groups were in similar agreement (74% A, 73% B) that the system was somewhat enjoyable.

When asked what was the best thing about using DISCOVER, both groups indicated (23% A, 24% B) that DISCOVER II was a good way of identifying occupations or schools and slightly differed over the degree of which good information was provided about occupations or schools (45% A, 39% B). However, when assessing the usefulness of self-information (values, interests and abilities) more of Group B responded favorably (29% B, 19% A).

Again, both groups agreed (86% A, 89%B) that they had little to no hardware or software program problems with using the system. Margin of agreement over narrowing choice of occupation to one or several occupations favored Group A (54%, A 44% B). When asked of the chances of repeated DISCOVER II usage, both groups virtually agreed (73%) that it was above average to excellent.

More of Group A (13%, 10% B) indicated they either read or wrote for more information. Also, more of the same group (41% A, 29% B) spoke to a counselor, parent or one employed in an occupation. Finally, a larger number of Group B (58% A, 65% B) did not participate in these career-related activities outside of using DISCOVER II.

The above data indicate that when additional career assistance is provided DISCOVER II users (Group A) through a directive approach, there is a tendancy to rate the system less helpful overall and in assessing self-information as compared to those not receiving any such outside assistance (Group B). Outside directive assistance also encouraged more career related activities and narrowing of occupational choice by Group A (See Appendix J).

Survey of Career Development Activity

Administered at the study's conclusion to the two treatment groups - DISCOVER II plus directive counseling (Group A) and DISCOVER II use only (Group B), both indicated equally (96%) that using DISCOVER II had helped them. When questioned how, both groups closely agreed (76% A, 82% B) that it expanded their knowledge of occupations while 72% of Group A and 61% of Group B acknowledged it expanded their knowledge of career options open to them. Roughly the same amount of each group thought DISCOVER II had helped them decide on a major.

However, almost twice as many of Group A (35%) as compared to Group B (18%) felt they could better understand themselves after using DISCOVER II while 45% of Group A and 32% of Group B indicated that the system helped identify occupational preparation needed. More of Group B (61% B, 52% A) indicated unfamiliar occupations were clarified. Asked if they were able to declare a major, 45% of Group A and 54% of Group B responded affirmatively. Of those not able to declare a major at that point, 93% of Group A were able to identify a field of study for further exploration while only 43% of Group B could make that decision.

Both groups (69% A, 64% B) agreed that DISCOVER II was more complete than other career resources and preferred using it first and seeing a counselor later (52% A, 68% B). More of Group A (17% A, 7%B) preferred using DISCOVER exclusively and seeing a counselor first before using the system (21% A, 4% B). However, more of Group B (68% B, 52% B) preferred using the system prior to counselor contact.

When asked if they used the services of the Career Planning & Placement Center, 93% of Group A and 82% of Group B so indicated. Over 75% of each group indicated making three or more visits to the center with 86% of Group B stating they spent three or more hours at the center as compared to 79% of Group A.

Use of other resources, in addition to DISCOVER II, was reported by more of Group A. Specifically, Group A used items such as the Dictionary of Occupational Titles, Occupational Outlook Handbook, Encyclopedia of Careers and individual career texts more frequently than Group B (See Table G-1). The same was true for using other campus sources to obtain information regarding majors or careers.

When asked to identify whether other individuals were consulted to discuss occupational choices or learn more about a given major or career, Group A cited using the Career Planning & Placement Center staff more frequently than other sources (48% A, 7% B). However this was reversed for Group B who relied more frequently on other information sources (see Appendix K).

CONCLUSIONS
(University Study)

Hypothesis One

Analysis of Career Development Inventory (CDI) data indicated that a significant difference was found between the two treatment groups (directive and non-directive) and also between the directive and control groups on the Career Planning, Career Exploration, Career Development Attitude and Career Orientation Total Scales of the CDI. The above significance, when found, clearly favored the directive group over both the non-directive and control groups for each occurance.

DISCOVER II, when combined with directive counseling in the form of supplemental career development sessions, produced a higher level of career maturity measurment on the CDI for those subjects receiving that form of treatment. When compared to subjects exposed to DISCOVER II alone and the no-treatment control groups, the directive group was found to outperform the latter two groups in measured level of career maturity at the university level. Therefore, the null hypothesis stating all groups will perform equally well when measured for career maturity is rejected.

Hypothesis Two

When university subjects were measured for career maturity using the CDI and compared for sex difference, a significant difference was found in favor of the females only on the Decision Making Scale. Two other scales (World of Work and Career Development Knowledge) had F values demonstrating trends toward significance. These results, however not as pronounced, were similar to the companion high school study where significance was found for all three scales.

This cognitive measure of career problem solving and awareness of occupational knowledge in career planning is one half the total of career maturity measurement on the CDI. As in the high school study, no attempt was made to analyze individual study group sex difference results but relied solely on aggregate data of the total university study population.

The remaining half of career maturity measurement on the CDI is composed of two attitude scales (Career Planning and Career Exploration). Neither of these two scales showed significance for career maturity based on sex difference in all three study groups. Again, these results mirror the high school study.

Therefore, based upon the above results, university freshmen subjects were not found to be significantly different when measured for sex difference. When compared to the high school population, the university subjects demonstrated less difference between sexes on measure of career maturity. We can possibly conclude that as age of subjects increase, the gap in career maturity level between the sexes declines. Even though university freshmen females scored higher than their male counterparts, the degree of difference on the CDI was not great enough to produce a significant difference on the Career Orientation Total Scale of that instrument. Therefore, the results were inconclusive in regards to career maturity as measured by the CDI.

The original null hypothesis is therefore not rejected based upon these findings.

Hypothesis Three

Assessment of subject involvement in those career development tasks measured by the Survey of Career Development (i.e., self exploration activities, career decision making, learning about occupations, and making career plans) confirmed results in favor of the two treatment groups. A significant difference was found on four of the five scales. The directive and non-directive groups consistantly outscored the control group on all five scales but had little variation between their scores. (Actual results were split between the two treatment groups.)

The above findings indicate that DISCOVER II use alone (non-directive group) produced near equal or similar results for subject involvement in selected career development tasks as when compared to subjects in the directive counseling treatment group. Similar results were also observed between the treatment groups through on-line user evaluative data of the DISCOVER II system. One exception was the non-directive group's higher rating of the usefulness of DISCOVER II's self-information data (a result possibly due to their not receiving additional follow-up information on that topic in a career development course). However, it is possible that use of DISCOVER II alone provided sufficient input for users to more positively assess initializing and/or completing action on a given career development task. It is further possible that the directive group's exposure to additional parallel content in the career course reached the point of diminishing returns for specific career development tasks as measured by the Survey of Career Development.

Hence, the results indicate that subjects in the two treatment groups demonstrated a significant difference for degree of involvement in career development tasks as compared to the no treatment control group. Based on those findings the original null hypothesis is rejected.

Hypothesis Four

Both treatment groups indicated increased evidence of participation in related career development activities outside of a career development course and/or using DISCOVER II. Although frequency of taking part in such activities varied in degree between the two groups, more of the directive group used services of the Career Planning & Placement Center, referenced specific shelved materials and consulted Center Staff more frequently than non-directive subjects who relied on outside personnel to a greater extent.

Therefore, overall results of measured career development activities induced by this study in the two treatment groups outside of using DISCOVER II and/or participating in a short career development course, favored the directive group as measured by frequency of occurance. These findings provide sufficient evidence to reject the original null hypothesis.

RECOMMENDATIONS
(University Study)

1. All undecided majors or general studies students should be directed by their faculty advisor to utilize the DISCOVER II system as a means of further enhancing their career development and better preparing them to make informed career choices.

2. The DISCOVER II system should be coupled with some form of a career development course offering directive guidance for undecided majors so as to maximize the benefits to users. Method of counselor intervention should provide positive student feedback as needed.

3. Need for counselor intervention and follow-up for DISCOVER II undecided majors to support their career choice process should be met through assigning increased counselor/client contact at the Career Planning & Placement Center as staffing time permits.

4. A follow-up study should be conducted with students in this study to assess attrition rates, degree of academic success, incidence of disciplinary difficulties and utilization of other campus resources associated with career development assistance.

5. Additional research should be performed on the effectiveness of DISCOVER II on students with declared majors, guaduate students and others who may utilize the system for career assistance.

6. Faculty advisors of MU students should be oriented to use of the DISCOVER II system with their advisees and its potential for providing assistance in the academic/career choice arena.

7. The DISCOVER system should be made accessible to more MU students through the setup of an IBM mainframe/multiple user terminal configuration with terminals strategically situated in dorms, the student center, Counseling Center, and Ganser library in addition to the Career Planning & Placement Center.

8. The original DISCOVER II program at the Career Planning & Placement Center be updated to a hard disc system with laser disc capability for visually accessing the 425 occupations in its database.

9. Continued use should be made of DISCOVER II by the Center for Academic Development in its June-January and PACE programs. Also, any other student assistance programs on campus should be encouraged to incorporate its use, where feasible, to students served.

10. The MU Counseling Center should employ DISCOVER II's on-line assessment capabilities of a variety of standardized instruments related to career decision-making.

11. The MU Counselor Education Department should incorporate use of the DISCOVER II system as an instructional tool for counselors in preparation through an on-site practicum training arrangement at the Career Planning & Placement Center.

12. As part of its outreach services through economic development activities, MU should expand the DISCOVER II database to provide enhanced services to adult users in the community.

13. Further research should be conducted using DISCOVER II at the university level with a larger study group over an extended period of time to gain a clearer picture on career maturity of this population.

APPENDICIES

AND

TABLES

DISCOVER

FOR POSTSECONDARY INSTITUTIONS

THE LOGICAL CHOICE

"DISCOVER allows students to explore careers they might otherwise not have considered. With today's job market, students need to be aware of many career alternatives."

D. Landers
Career Planning Coordinator
St. Michael's College
Winooski, VT

DISCOVER

BEST COPY AVAILABLE

DISCOVER ADVANCES CAMPUS RETENTION EFFORTS

According to Alexander Astin, students are more likely to complete their college degrees if they know what they need to study to attain their career goals. DISCOVER can present information to students to help them learn more about themselves and select appropriate career alternatives.

DISCOVER promotes an increase in self-understanding by helping students to assess their interests, rate their aptitudes, and prioritize their values according to their own needs. DISCOVER can combine these personal preferences with occupational characteristics selected by the student. The computer then suggests occupations that are consistent with the user's personal interests and needs. DISCOVER provides a process and information to help the student explore the occupations in detail.

DISCOVER permits students to consider and explore as many alternatives as they like. Such easy exploration of many different alternatives gives students greater confidence in their occupational decisions and makes them more likely to persist to graduation.

DISCOVER is a complete career information and guidance system—a unique, computer-assisted program designed to meet the needs of today's postsecondary institutions and the students they serve.

DISCOVER helps educational institutions to:

- provide personalized career exploration opportunities
- enhance their service image within the community
- support the delivery of academic advising services in a cost-effective manner
- strengthen their high school relations.

With DISCOVER, students can:

- quickly and easily access vast quantities of up-to-date occupational and educational information
- consider vocational options based on their own needs and goals
- link course selection to career decisions
- receive personalized assistance in exploring a multitude of career options.

DISCOVER is the most comprehensive yet concise, simple yet sophisticated resource available in the field of career information and guidance. That is why so many academic advisers and career placement professionals agree that DISCOVER is the logical choice.

> ***"When given a choice between DISCOVER and other career exploration tools, our clients choose DISCOVER. I'm pleased to have a resource that gives clients experience with the computer."***
>
> M. Kennedy
> Coordinator of the Career Center
> Penn Valley Community College
> Kansas City, MO

DISCOVER SUPPORTS THE CAREER PLACEMENT PROCESS

DISCOVER is a tool that assists the placement office staff in managing and delivering accurate, up-to-date information. The DISCOVER program utilizes job identification criteria such as required education, work environment, and employment outlook. DISCOVER also relates college majors to appropriate occupational alternatives.

With DISCOVER, the placement counselor's time can be used most effectively and professionally, in one-to-one or small group contact. Students will come to these sessions better prepared, with a clearer understanding of themselves, and with a strong sense of appropriate career options. The results are a higher quality, more productive session.

> ***"DISCOVER has strengthened our career advisement area. The counselor's role has emerged from fact-finding to information-processing. And it's now the students who determine which career options are realistic for them."***
>
> E. Gaber
> Director of DISCOVER
> Northeast Missouri State University
> Kirksville, MO

> ***"We have found that DISCOVER is a very effective counseling tool—students' use of DISCOVER alone or with a counselor produced significant results. Time spent between students and counselors is much more meaningful."***

Dr. J. Slick, Assistant Director
Career Development and Placement Center
Penn State University
University Park, PA

DISCOVER FURNISHES GUIDANCE AND INFORMATION IN ONE PACKAGE

DISCOVER offers extensive files of occupational and educational information. The files include more than 400 occupations, representing jobs held by 94% of the work force. The educational files offer information on two- and four-year colleges, specialized training schools, and graduate schools. These occupational and educational files contain accurate and relevant information, and are updated annually.

But DISCOVER is more than an information system. DISCOVER offers the most comprehensive guidance component available in the entire market of computer-based career guidance and information systems.

Assessments of interests, aptitudes, and values can be taken directly at the terminal, and results are furnished instantly. DISCOVER also accepts scores from interest and ability tests that have been taken on paper. Those scores can be entered into the system and the results incorporated into the program. Certain versions of DISCOVER accept interest inventory scores from UNIACT, SDS, Strong-Campbell, OVIS I or II, and Kuder E. Compatible aptitude tests include CPP, DAT, GATB, and ASVAB.

DISCOVER has the capability to remember users for later contact. DISCOVER can maintain a record of key information about each student's use of the program, a feature that allows the user to return to the system later and resume the program, review past uses, or revise previously entered information.

DISCOVER CONTENT AREAS

• Self-information

This is the guidance portion of the DISCOVER system. It provides the student with tools to use in assessing his or her own interests, aptitudes, and values, and identifies occupations for exploration. The student receives a summary of self-information and appropriate occupational alternatives that have top priority for exploration.

• Strategies for Identifying Occupations

DISCOVER allows the student to identify appropriate occupations by a variety of methods. These include searches by:

- —interest inventory scores
- —aptitude test scores
- —values
- —job characteristics
- —majors or programs of study.

• Occupational Information

DISCOVER users have the option to browse the occupational data file for occupations of interest, or to specify which occupations they would like to learn more about. The student may ask more than a dozen questions about each occupation on file. The following options may be added to this segment of the DISCOVER files:

- —local occupational information, to be combined with national data (this option available for all versions of DISCOVER)
- —videodisc enhancement, featuring visuals of each occupation in the DISCOVER file (this option available for the microcomputer version of DISCOVER).

• Educational Information

At this point in the system, the student may use a combination of designated characteristics to search through a national two-year or four-year college file, a graduate school file, or with selected versions, a specialized training school file. These files provide extensive, detailed information on each educational institution contained in the file.

DISCOVER OFFERS ENJOYABLE, EASY ACCESS TO FUTURE OPPORTUNITIES

Academic advisers and placement counselors report that DISCOVER has high user appeal. Students appreciate the objectivity and confidentiality of computers. Because they enjoy using this modern technology, they become more interested and more involved in the career planning process. With DISCOVER, they are motivated to get more details, to further explore career options by using other resource materials.

Operation of the DISCOVER system couldn't be easier. No special training or experience with computers is necessary to obtain maximum results from DISCOVER. The user is guided through the program. At every point, the computer provides questions or instructions on the monitor. These are written in simple, everyday language.

The DISCOVER user is always in control. The student can enter the system at any point, and can explore desired information in any sequence. And students can print a record of their interaction with DISCOVER. This provides a valuable report for future reference.

The DISCOVER program runs on a variety of computer systems commonly found in educational settings.

For further information about DISCOVER, please contact the office serving your region of the country.

States west of the Mississippi River:
ACT Career Planning Services
The American College Testing Program
P.O. Box 168
Iowa City, Iowa 52243

(319) 337-1055

States east of the Mississippi River:
DISCOVER/ACT
230 Schilling Circle
Schilling Plaza South
Hunt Valley, Maryland 21031

(301) 628-8000

Or contact your ACT Regional Office.

MU
MILLERSVILLE
UNIVERSITY

Millersville University of Pennsylvania
Millersville, Pennsylvania 17551

July 22, 1983

Mr./Mrs. John Doe
100 Main Street
Anytown, PA 17042

Dear Mr./Mrs. Doe:

Your daughter has been selected to participate in a special program designed to assist her in choosing a major and college courses which best fit her career decisions. Millersville University is now equipped with an advanced, computerized career development system which will help Sandy to: (1) explore personal interests, work-related values and skills, (2) apply such a self-understanding to potential career options, (3) sharpen decision-making skills, (4) identify specific occupations for further exploration, and (5) link the selection of a major and college courses to a career decision.

This summer Sandy will be notified that she will receive an updated student schedule just before the start of the fall semester. All persons receiving such a schedule with DISC 001 on it are required to attend for a limited time commitment only. Please discuss this with Sandy and encourage her to attend. Participation in this program may prove to be a most vital turning point for Sandy.

If you have any questions or wish further elaboration, please feel free to call me at (717) 872-3312.

Sincerely,

Philip R. Bishop

Philip R. Bishop, Director
Career Planning & Placement

PRB:msh
Encl: Copy of announcement
sent to Sandy

MILLERSVILLE
UNIVERSITY

Career Planning, Placement & Cooperative Education

Millersville University of Pennsylvania
Millersville, Pennsylvania 17551
(717) 872-3312
PANET 8 479 3312

YOU'RE GOING TO RECEIVE ASSISTANCE WITH THE SELECTION OF YOUR CAREER AND MAJOR THROUGH USE OF A COMPUTER-BASED CAREER GUIDANCE AND INFORMATION SYSTEM

DISCOVER
CAREER GUIDANCE
SYSTEM

As an "undecided major" student this fall 1983, you will be assigned to a classroom for a few weeks at the beginning of the semester. Shortly after arriving at Millersville University you will receive an updated student schedule (green) which will list DISC 001 as one of your courses. The commitment of our university to help undecided freshmen requires that you must attend these sessions.

Millersville University is now equipped with the latest microcomputer technology to assist you with career planning and the choice of a major. By using the most comprehensive, up-to-date computerized career development system available, you will now have instant access to a data base which will help you (1) explore work-related values and skills, (2) apply such a self-understanding to potential career options, (3) sharpen your decision-making skills, (4) identify specific occupations for further exploration, and (5) link the selection of a major and college courses to your career decisions.

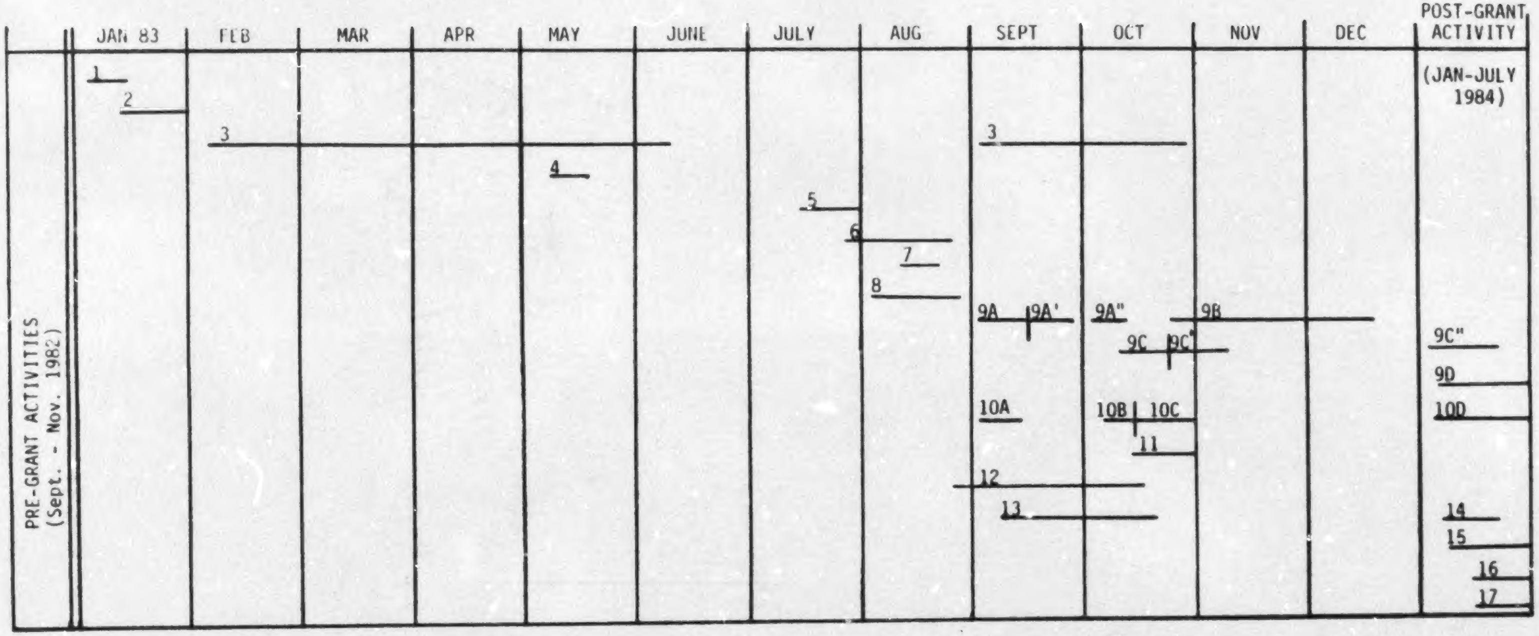
We are indeed pleased that you have been selected to participate in Millersville University's first use of computer assisted career guidance. The potential benefit from your participation is enormous. We are looking forward to meeting with you early fall semester. Until then, we hope your summer goes exceptionally well.

PRB:jmg
7/8/83

BEST COPY AVAILABLE

APPENDIX C

TIMELINE
UNIVERSITY STUDY



PRE-GRANT ACTIVITIES

PG-1 Visit to vendor of DISCOVER
PG-2 DISCOVER demonstration at PSU
PG-3 Design study and write proposal for funding

GRANT PERIOD ACTIVITIES

1. Notification of grant results from PDE
2. Equipment, teaching supplies and career inventories ordered
3. Companion high school study conducted
4. Study population selected
5. Student and parent letters mailed
6. Summer orientation sessions conducted for students and parents
7. Student treatment and control groups determined
8. Career course content developed for use with directive group

9A. CDI pretest administered to all study groups
9A' CDI pretest sent for scoring
9A" CDI pretest interpreted to directive group
9B. CDI pretest data coded and entered into computer for statistical treatment
9C. CDI posttest administered to all study groups
9C' Posttest sent for scoring
9C" CDI posttest results returned to all study groups
9D. CDI posttest data entered into computer for statistical treatment
10A. Survey of Career Development administered to all groups (pretest)
10B. Survey of Career Development administered to all groups (posttest)
10C. Pre and posttest results of the Survey of Career Development interpreted at student exit interviews (D,N)
10D. Survey of Career Development data entered into computer for statistical treatment
11. Survey of Career Development Activity administered at student exit interviews
12. Career course sessions conducted
13. Treatment groups (D,N) scheduled for DISCOVER II use

POST-GRANT ACTIVITIES

14. Analysis of all study data
15. Preparation of final report
16. Individual interpretation of high school study results at each of the six schools
17. Study results shared at two summer counselor workshops

D = Directive Group
N = Non-Directive Group

BEST COPY AVAILABLE

APPENDIX D

MILLERSVILLE UNIVERSITY
CAREER PLANNING & PLACEMENT CENTER
DISCOVER PROGRAM

DISC 001, SECTION _______ INSTRUCTOR ___________________________

COURSE SYLLABUS

SESSION	TOPIC
1	Objectives of Program and the DISCOVER System
2	Administration of the CDI
3	Procedures for using DISCOVER
4	Self-Assessment of my Past Experiences
5	Self-Assessment of my Skills
6	Self-Assessment of my Values
7	Self-Assessment of my Interests
8	Expanding my Knowledge of Occupations
9	Using Accurate and Current Sources of Career Information
10	Procedures for Selecting a Major
11	Analyzing a Selecting a Major
12	Summarizing Personal Information to form a Self-Image
13	Applying Personal Information to a Tentative Career
14	Wrap-up and Final Exam

NOTE: There is no assigned text for the course. Materials will be provided for readings and assignments.

APPENDIX E

Career Planning, Placement & Cooperative Education

MILLERSVILLE
UNIVERSITY

Millersville University of Pennsylvania
Millersville, Pennsylvania 17551
(717) 872-3312
PANET 8-479 3312

October 7, 1983

Dear

Early this semester you attended three sessions of DISC 001. At the last scheduled class you were instructed to schedule four, one-hour sessions on the computer at the Career Planning and Placement Center. Upon receipt of this letter you should have completed the above course requirement.

However, one final requirement remains to be completed. It is necessary that you are present at the last scheduled session so we may assess your growth in career development. Therefore, your section 03 will meet on October 17 at 8:00 a.m. in room 109 of Bassler Hall.

It is extremely important that you attend this session. We look forward to seeing you at the above date, time, and location.

If you have any questions, please call Ext. 3315.

Sincerely,

Dr. Frank E. Rozman
Career Development Coordinator
Career Planning & Placement Center

/OS/
kg

cc: v

(Letter sent to non-directive group)

MU
MILLERSVILLE
UNIVERSITY

Career Planning, Placement & Cooperative Education

Millersville University of Pennsylvania
Millersville, Pennsylvania 17551
(717) 872-3312
PANET 8-479-3312

October 7, 1983

Dear

Early this semester you attended two sessions of DISC 001. At the last scheduled meeting of this course your instructor indicated a notice would be sent indicating the date, time, and location of the next session.

One of the requirements of the course is to use the computerized career guidance system at the Career Planning and Placement Center. Due to the large course enrollment, your section was scheduled for the computer during the second half of this semester.

Therefore, in order to complete the DISC 001, course requirements, it is necessary that you attend the next session. Your section 10 will meet on October 17 at 3:00 p.m. in room 109 of Bassler Hall. We are looking forward to continuing what should prove to be both an interesting and useful program for you, careerwise.

If you have any questions, please call Ext. 3315.

Sincerely,

Dr. Frank E. Rozman
Career Development Coordinator
Career Planning & Placement Center

/OS/
kg

cc:

(Letter sent to control group)

APPENDIX F

NAME ______________________________ DISC. 001 SECTION ____ DATE ______________

SURVEY OF CAREER DEVELOPMENT

The purpose of this survey is to help you find out more about where you are in your career "growing up" process. This understanding will help you to decide what areas may need some attention. You will now be presented with a series of statements. There are no right or wrong responses to these questions. The only right responses are the ones which are right for you. Please respond to the statements as honestly as you can.

For each of the below statements, rate them according to the following scale:

5 = I have already done this
4 = I am now doing what needs to be done.
3 = I know what to do about it.
2 = I have thought about it, but do not yet know what to do about it.
1 = I have not yet thought much about it.

STATEMENTS ABOUT MYSELF (1)

1. Learning what values are. 5 4 3 2 1
2. Clarifying my own values. 5 4 3 2 1
3. Deciding which values are most important to me. 5 4 3 2 1
4. Finding out how values will affect my career choice. 5 4 3 2 1
5. Comparing my values with the values of parents, friends, and society. 5 4 3 2 1
6. Learning how values affect decision-making. 5 4 3 2 1

STATEMENTS ABOUT MYSELF (11)

7. Finding out what my interests are. 5 4 3 2 1
8. Exploring my abilities. 5 4 3 2 1
9. Finding out how my interests can be used in an occupation. 5 4 3 2 1
10. Finding out how my abilities can be used in an occupation. 5 4 3 2 1
11. Clarifying my ideas about the type of work I would really like to do. 5 4 3 2 1
12. Deciding what activities I enjoy most. 5 4 3 2 1

STATEMENTS ABOUT DECISION MAKING

13. Finding out how to make good decisions. 5 4 3 2 1
14. Learning the important steps of the decision making process. 5 4 3 2 1
15. Learning the different ways of making decisions. 5 4 3 2 1
16. Learning more about how I make decisions. 5 4 3 2 1
17. Finding out how decision making skills may affect my choice of occupation and lifestyle. 5 4 3 2 1
18. Using my decision making skills to get me to my goals. 5 4 3 2 1

APPENDIX F (cont.)

For each of the below statements, rate them according to the following scale:

5 = I have already done this.
4 = I am now doing what needs to be done.
3 = I know what to do about it.
2 = I have thought about it, but do not yet know what to do about it.
1 = I have not yet thought much about it.

STATEMENTS ABOUT OCCUPATIONS

19.	Finding out more about what people do in certain kinds of work.	5	4	3	2	1
20.	Learning how occupations can be classified (grouped).	5	4	3	2	1
21.	Learning what skills and training are required for certain jobs.	5	4	3	2	1
22.	Exploring a lot of occupations before making a decision.	5	4	3	2	1
23.	Getting a temporary job that will help me decide what kind of work I really might go into.	5	4	3	2	1
24	Finding out how to explore many different occupations.	5	4	3	2	1

STATEMENTS ABOUT CAREER PLANNING

25.	Knowing what steps to take to achieve my career objective.	5	4	3	2	1
26.	Taking steps which will help me achieve my ambitions.	5	4	3	2	1
27.	Making specific plans to achieve my current career goals.	5	4	3	2	1
28.	Deciding how to qualify for the work I now want to do.	5	4	3	2	1
29.	Getting the special training and experience I need.	5	4	3	2	1
30.	Selecting a first job or a plan to get training for my first job.	5	4	3	2	1

Scoring: The raw scores are tallied for each of the five scales. If your score scale total is less than 21, you need to get more information concerning that specific area.

Table F-1

Comparison of University Treatment Groups to Posttest Score (Survey of Career Development)

Treatment Group[a]	Scale A Statements About Myself I		Scale B Statements About Myself II		Scale C Career Decision Making		Scale D Learning About Occupations		Scale E Career Planning	
	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value
Directive	26.60		26.39		23.68		24.80		21.70	
Non-Directive	27.20	11.82**	25.35	11.44**	23.61	7.16**	25.16	14.67**	20.31	
No Treatment Control	22.00		22.15		20.90		19.32		19.94	

[a] N = Directive (28), Non-Directive (28), Control (20)

[b] Adjusted for pretest score.

** $p < .01$

APPENDIX G

N = 29

MILLERSVILLE UNIVERSITY
SURVEY OF CAREER DEVELOPMENT ACTIVITY

NAME ______________________ SECTION (DIRECTIVE) DATE ______________________

1. Has using DISCOVER helped you?
   a. 96.6% YES b. 3.4% NO

2. If yes, indicate how. (more than one response can be marked)
   a. 75.9% expanded my knowledge of occupations
   b. 72.4% expanded my knowledge of career options open to me
   c. 27.6% helped me decide on a major
   d. 34.5% helped me to better understand myself
   e. 44.9% identified occupational preparation required
   f. 51.7% clarified occupations unfamiliar to me
   g. 6.9% other (specify) ______________________

3. I am now able to declare a major
   a. 44.8% YES b. 51.7% NO NR 3.5%

4. If yes, I have chosen the following major (list below)

   ____

5. If no, I have been at least able to identify a field of study for further exploration.
   a. 93.3% YES b. 6.7% NO

6. How helpful do you feel the information gained from DISCOVER has been for you?
   a. 69.0% more complete than other career resources
   b. 24.1% similar to other career resources
   c. .0% not as complete as other career resources
   d. 3.5% other (specify) ______________________

7. By what method do you prefer receiving career information?
   a. 6.9% talking exclusively with a counselor
   b. 17.2% using the computer (DISCOVER) exclusively
   c. 51.7% using the computer first and then seeing a counselor
   d. 20.7% seeing a counselor first and then using the computer
   e. 3.5% other (specify) ______________________

8. Have you used the services of the Career Planning and Placement Center at Millersville University?
   a. 93.1% YES b. 6.9% NO

9. If yes, how many visits did you make?

_____ visit(s) (1) 3.5%, (2) 3.5%, (3) 13.8%, (4) 44.9%, (4+) 34.5%

10. Please estimate to the nearest half hour the total amount of time you have spent in the Career Planning and Placement Center.

_____ hour(s) (1) 3.5%, (2) 0%, (3) 17.2%, (4) 27.9%, (4+) 41.4%

11. Please check the materials which you used at the center.

a. 100% DISCOVER, computer-based career guidance system
b. 31.0% Dictionary of Occupational Titles
c. 31.0% Occupational Outlook Handbook
d. 10.3% Encyclopedia of Careers
e. 24.1% individual career texts
f. 6.9% company brochures/file
g. 6.9% other (specify ____________________

12. If you have obtained written or audio-visual information regarding majors or careers from sources other than the Career Planning and Placement Center, please specify below.

a. .0% Center for Academic Advisement
b. 6.9% Academic departments
c. .0% Counseling Center
d. 10.3% Admissions Office
e. 34.5% Academic Fair
f. 6.9% Ganser Library
g. 3.5% Other (specify ____________________

13. If you have met with any persons in order to discuss possible occupational choices or to learn more about a given major or career, please check them and note the number of contacts which you had with each source.

Source Used	# of Contacts	
a. 48.3%	( )	Career Planning & Placement Center Staff Prof Staff Peer Counselors
b. 6.9%	( )	Academic advisor
c. 10.3%	( )	Faculty other than your advisor
d. 58.6%	( )	Parents
e. 38.0%	( )	Family other than parents
f. 48.3%	( )	Friends
g. 34.5%	( )	Persons employed in a given career interest area
h. 10.3%	( )	Others, please specify

____
____
____

APPENDIX G (cont.)

N = 28

MILLERSVILLE UNIVERSITY
SURVEY OF CAREER DEVELOPMENT ACTIVITY

NAME ______________________ SECTION (NON-DIRECTIVE) DATE ______________________

1. Has using DISCOVER helped you?

   a. 96.4% YES b. 3.6% NO

2. If yes, indicate how. (more than one response can be marked)

   a. 82.1% expanded my knowledge of occupations
   b. 60.7% expanded my knowledge of career options open to me
   c. 25.0% helped me decide on a major
   d. 17.9% helped me to better understand myself
   e. 32.1% identified occupational preparation required
   f. 60.7% clarified occupations unfamiliar to me
   g. 7.1% other (specify) ______________________

3. I am now able to declare a major

   a. 53.6% YES b. 46.4% NO

4. If yes, I have chosen the following major (list below)

   ____

5. If no, I have been at least able to identify a field of study for further exploration.

   a. 42.9% YES b. 7.1% NO

6. How helpful do you feel the information gained from DISCOVER has been for you?

   a. 64.3% more complete than other career resources
   b. 32.1% similar to other career resources
   c. .0% not as complete as other career resources
   d. 7.1% other (specify) ______________________

7. By what method do you prefer receiving career information?

   a. 7.1% talking exclusively with a counselor
   b. 7.1% using the computer (DISCOVER) exclusively
   c. 67.7% using the computer first and then seeing a counselor
   d. 3.8% seeing a counselor first and then using the computer
   e. 14.3% other (specify) ______________________

8. Have you used the services of the Career Planning and Placement Center at Millersville University?

   a. 82.1% YES b. 17.9% NO

APPENDIX G (cont.)

9. If yes, how many visits did you make?

_____ visit(s) (1) 0%, (2) 0%, (3) 25.0%, (4) 50.0%, (4+) 25.0%

10. Please estimate to the nearest half hour the total amount of time you have spent in the Career Planning and Placement Center.

_____ hour(s) (1) 0%, (2) 0%, (3) 14.3%, (4) 67.9%, (4+) 17.9%

11. Please check the materials which you used at the center.

a. 100% DISCOVER, computer-based career guidance system
b. 7.1% Dictionary of Occupational Titles
c. 7.1% Occupational Outlook Handbook
d. .0% Encyclopedia of Careers
e. 7.1% individual career texts
f. 14.3% company brochures/file
g. 3.6% other (specify ____________________

12. If you have obtained written or audio-visual information regarding majors or careers from sources other than the Career Planning and Placement Center, please specify below.

a. .0% Center for Academic Advisement
b. 3.6% Academic departments
c. .0% Counseling Center
d. 7.1% Admissions Office
e. 17.9% Academic Fair
f. 3.6% Ganser Library
g. 7.1% Other (specify ____________________

13. If you have met with any persons in order to discuss possible occupational choices or to learn more about a given major or career, please check them and note the number of contacts which you had with each source.

Source Used	# of Contacts	
a. 7.1%	( )	Career Planning & Placement Center Staff Prof Staff Peer Counselors
b. 7.1%	( )	Academic advisor
c. 17.9%	( )	Faculty other than your advisor
d. 64.3%	( )	Parents
e. 46.4%	( )	Family other than parents
f. 64.3%	( )	Friends
g. 53.6%	( )	Persons employed in a given career interest area
h. 14.3%	( )	Others, please specify

APPENDIX H

Career Development Inventory Subscales and their Meaning

Donald E. Super, 1981

Career Planning Scale	- (CP)	20 items in which student reports the career planning in which he/she is engaged. Scale assesses attitudes and reported planfulness.
Career Exploration Scale	- (CE)	20 item self-report, student rates various sources of career information (ie. parents/friends/printed material/media etc.) and later rates their usefulness and the usefullness of the information obtained thereby.
Decision Making Scale	- (DM)	20 sketches of persons making career decisions - student is asked to solve suggested career "problem" (ie. those who can better solve a stated problem can better solve the problems they will face). Scale assesses ability to apply principles of Career Decision Making.
World of Work Scale	- (WW)	20 questions, 10 on career development tasks within the Exploratory and early Establishment stages (Super 1957, Super & Bohn 1970). Other 10 test knowledge of occupational structure of sampled occupations. Scale assesses awareness and occupational knowledge that contribute to successful career planning.
Knowledge of Preferred Occupation Scale	- (PO)	[illegible]0 multiple choice questions pertaining to all occupations. Student chooses a specific career area, then answers questions (general) about that specific occupation. Correct answers compiled from DOT, OOH, or panel of 20 "expert" vocational psychologists if no objective data exists. Scale measures amount of in depth exploration on part of student in stated vocational choice area. Job characteristics, hours of work, employment prospects, amount of education required, etc. are examined.
Career Development Attitude	- (CDA)	Combination of CP and CE scales which are highly correlated for overall attitudinal scales. Has increased reliability as a measure of attitude.
Career Development Knowledge	- (CDK)	Combination of DM and WW scales. Combination makes a concise cognitive scale with increased reliability.
Career Orientation Total	- (COT)	Combination of CP, CE, DM and WW scales. Approaches an overall measure of Career Maturity, measuring four of Super's five basic dimensions of adolescent vocational maturity (1974). Best viewed as a composite measure of four important aspects of career maturity.

College and University Form

APPENDIX I

Developed by Drs. Donald E. Super, Albert S. Thompson,
Richard H. Lindeman, Jean P. Jordaan, and Roger A. Myers
at Teachers College, Columbia University

Career Development Inventory

DIRECTIONS

The Career Development Inventory asks you about college, work, your future career, and some of the plans you may have made. Answers to questions like these can indicate what kind of help may be useful to you in planning and preparing for a job after graduation, or for graduate or professional school training before pursuing your occupational career.

The Inventory consists of two parts. The person who administers it will indicate whether you should complete the first part, the second part, or both parts. Part I (Career Orientation) begins on the next page and Part II (Knowledge of Preferred Occupation) begins on page 11.

All your answers to the CDI go on a special answer sheet that should accompany this booklet. Make no marks of any kind on this booklet. Record your answers by blackening the appropriate lettered boxes on the answer sheet, using a #2 lead pencil. **Do not use a pen.** If you change an answer, please erase thoroughly.

Before opening the test booklet, fill in your name and the other information requested on the upper third of the answer sheet, following any special instructions of the person administering the inventory. Fill in the name boxes carefully.

When directed to do so, open this booklet and begin. Please answer every question. If you are not sure about an answer, guess; the first answer that comes to you is often the best one. Work rapidly, but be careful to make your marks in the right boxes for each question.

Consulting Psychologists Press, Inc., Palo Alto, California

©1981, by Consulting Psychologists Press, Inc., 577 College Ave., Palo Alto, CA 94306. All rights reserved. No portion of this material may be reproduced without written permission of the Publisher.

NOTE: The following pages (B-32 to B-45) have been removed due to the publishers copyright restrictions. Copies of the document can be obtained from the publisher listed above.

Table I-1

Comparison of University Treatment Groups to Posttest Score
(Career Development Inventory
College and University Form)

Treatment Group[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision Making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value
Directive	113.42		129.83		119.26		109.46		115.68		121.83		113.10		122.23	
Non-Directive	105.99	7.35^{**}	121.86	5.11^{**}	119.09		107.87		116.35		113.72	2.72^{c}	114.81		118.52	
No Treatment Control	96.99		115.40		120.76		108.60		117.35		110.08		116.79		115.01	

[a] N = Directive (30), Non-Directive (32), Control (25)

[b] Adjusted for pretest score.

[c] $p < .10$ (indicates possible trend)

[*] $p < .05$

[**] $p < .01$

Table I-2

Comparison of Total University Study Groups
t Values to Posttest Scores
(Career Development Inventory
College and University Form)

Study Group Pairs[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision Making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value	Mean Posttest Score	t Value
Directive	114.00	2.81**	129.97	2.43**	119.27		109.47		116.80		126.03	3.09**	117.00		126.48	3.14**
Control	99.24		117.76		120.76		108.60		117.32		110.08		116.16		116.20	
Directive	114.00	2.00*	129.97	2.06*	119.27		109.47		116.80		126.03	2.40**	117.00		126.48	2.77**
Non-Directive	103.69		119.88		119.09		107.88		115.34		113.72		114.81		117.56	
Non-Directive	103.69		119.88		119.09		107.88		115.34		113.72		114.81		117.56	
Control	99.24		117.76		120.76		108.60		117.32		110.08		116.16		116.20	

[a] N = Directive (30), Non-Directive (32), Control (25)

* $p < .05$

** $p < .01$

Table I-3

Comparison of University Treatment Groups by Sex Difference to Posttest Score (Career Development Inventory College and University Form)

Sex of Subject[a]	Scale A Career Planning		Scale B Career Exploration		Scale C Decision Making		Scale D World of Work		Scale E Preferred Occupation		Scale F Career Development Attitude		Scale G Career Development Knowledge		Scale H Career Orientation Total	
	Mean Posttest Score[b]	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value	Mean Posttest Score	F Value	Mean Posttest Score	F Value	Mean Posttest Score[b]	F Value
Male	103.85		124.44		115.82	8.7[illegible]**	107.74	3.67[c]	114.30		114.91		111.24	2.97[c]	116.55	
Female	108.35		120.86		123.90		109.63		118.78		116.10		118.39		121.31	

[a] N = Male (46), Female (41)

[b] Adjusted for pretest score.

[c] $p < .10$ (indicates possible trend)

** $p < .01$

APPENDIX J

DISCOVER II On-Line User Evaluation*
(University Study)

	Study Group	
	DIRECTIVE (A)	NON-DIRECTIVE (B)
A. How helpful was today's use of DISCOVER?		
1. very helpful	32%	45%
2. quite helpful	36%	28%
3. moderately helpful	22%	19%
4. somewhat helpful	7%	5%
5. not at all helpful	3%	3%
B. How enjoyable was your use of DISCOVER?		
1. very enjoyable	33%	37%
2. quite enjoyable	41%	36%
3. moderately enjoyable	16%	21%
4. somewhat enjoyable	10%	5%
5. not at all enjoyable	0%	1%
C. What was the best thing about your use of DISCOVER?		
1. Good information about occupations or schools	45%	39%
2. Good ways of identifying occupations or schools	23%	24%
3. Information about myself (values, interests, abilities)	19%	29%
4. Fun using the computer	11%	6%
5. Other	2%	2%
D. Did you have any of the following problems?		
1. Trouble with the computer	7%	6%
2. Unclear directions about how to use the computer	2%	1%
3. Unclear directions about how to use DISCOVER	1%	1%
4. Boredom	4%	3%
5. None of the above	86%	89%
E. Where are you now in your career planning?		
1. I have selected an occupation	7%	11%
2. I am seriously considering several occupations	47%	33%
3. I have narrowed choice to a broad group of occupations	27%	29%
4. I have some vague idea	16%	21%
5. I am "nowhere" as of now	4%	5%

APPENDIX J (cont.)

DISCOVER II On-Line User Evaluation*
(University Study)

	Study Group	
	DIRECTIVE (A)	NON-DIRECTIVE (B)
F. What are the chances of your coming back again to use DISCOVER?		
1. Excellent	73%	72%
2. Above Average	11%	12%
3. Fair	11%	7%
4. Poor	2%	4%
5. Very Poor	3%	4%
G. Which of the following have you done since you last used DISCOVER?		
1. Read printed material about occupations or further education.	13%	10%
2. Talked to a counselor.	9%	5%
3. Talked with a parent or another adult important to you.	24%	17%
4. Talked to someone who works in the occupation or knows about the school(s).	8%	7%
5. Written for more information.	1%	0%
6. None of the above.	58%	65%

---

*The percentages shown may not add up to 100% due to rounding.